DOMESTIC ENGINEERING

A Weekly Record of Progress in Plumbing, Heating, Ventilation and all Matters Pertaining to Domestic Sanitation

Whole No. 1364 CHICAGO, FEBRUARY 1, 1919 Vol. 86, No. 5

Farming communities offer ripe fields practically untouched for systems of sanitation, heating, water supply and electricity. The Federal Government favors and encourages the work of giving these things to the farmer, and during the war permitted the manufacture and installation of all such farm improvements though it curtailed the output for other classes of citizens.

WATER SUPPLY SYSTEMS OPEN A BIG FIELD FOR CRAFTSMEN.

MANY articles and editorials have appeared in the columns of this paper, pointing out to the plumbing and heating contractors the opportunities offered them in the sale of individual water supply systems, and plumbing and heating equipments to the farmer. Many of the contractors have taken up this trade extension work and find it more profitable than their former narrowed and restricted field of operations. Some have seen and appreciated the possibilities and have taken up the work in order to reap the profits, while others have been forced into it through lack of work in regular channels.

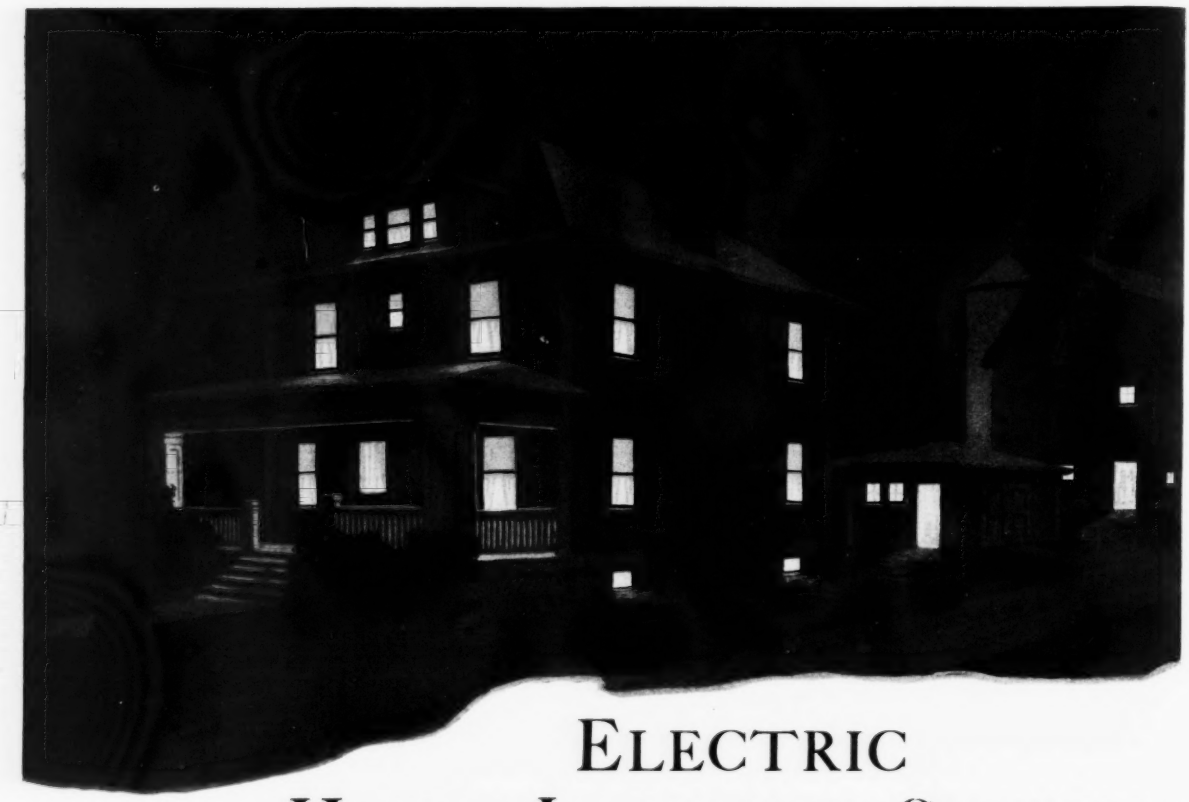
As the farmer himself has been forced to introduce a rotation in crops in order to get the proper crop yield from year to year instead of having poor crops or failures altogether, through lack of certain soil elements, and such, so the war has shown to many, and especially to the plumbing and heating contractors, the wisdom of having other good and profitable lines on which they can do a maximum of work during dull seasons in their regular channels. And the opportunities are so great in this field that it could well be included as a part of the regular work throughout the year, never ceasing in the efforts to secure the business and pushing it in seasons particularly desirable.

The location of many is such that they may not take up this particular kind of trade extension work, but there are thousands of our craftsmen, who are situated adjacent to prosperous farming communities where this business is awaiting them. And they should go out after it, without waiting for a war to curtail their operations in the regular channels, thus forcing them to turn their attentions to it in order to save themselves. It is a too important field. But it is the business of the craftsman, taking on this line, to go to the farmer and tell him what he has for his benefit, and explain its merits. The farmer is too busy a man, but he will be found of easier approach than men of any other class, more considerate of others, and will take all necessary time gladly to understand any proposition presented him. He has his own interests and his thought and work are directed to his own affairs of stock raising and crop production, so he will rarely, if ever, look up the plumber and heating contractor, and these will have to go out after him. In fact, this is and should be, a part of the necessary work of craftsmen, taking on these lines. Had the harvester companies depended solely on a display of their labor-saving devices in the show windows of implement dealers, or worse, had they depended solely on the distribution of literature, descriptive of these appliances, most farmers still might be harvesting their grain with a cradle.

On the next pages of this issue will be found an article on electrical light and power systems, so much to be desired in rural communities, and highly adaptable to the needs of the farm home. The work of selling and installing these could go hand in hand with that of water supply systems, and where these things are placed there is a certain future demand for a complete modern sanitation system.

We shall publish articles on these lines of work from time to time, explaining to the trade how they shall go about securing the business, what is being done, and what are the possibilities, and rendering any assistance within our power. We feel they are fields of labor both lucrative and worthy, comparatively new, and offer a rotation in work to help keep the day's labor full, if not the season's and the year's. At least, when the curtailment of operations in regular channels comes, and come it does, as every one now knows, there is other kindred work to turn to.

It should be added that while the primary considerations of the craftsmen are the profits to be obtained in this extension work, still there are other important results of moral good; for the craftsman in helping to improve the conditions in our rural communities, is performing a real service to the country.



ELECTRIC HOUSE LIGHTING SYSTEMS OFFER BIG FIELD *for* PLUMBING *and* HEATING CONTRACTORS

Opportunities Unequaled for Those Having Rural Outlets

By John F. Andrews

WITHIN quite recent periods there have arisen a number of manufacturers, who have developed and are successfully putting on the market various small electrical house lighting and power plants. These are peculiarly suited for the convenience and uses of farms and isolated homes, where electricity may not be had from large central supply stations, and they are being used in small villages for lighting of several homes, churches and stores. These manufacturers have found the field so profitable that they are specializing in the production of electrical apparatus and plants to fill the demand of farmers, and one may judge the rapid increase in this demand from the fact that in 1917 the farmers bought $30,000,000 of electrical equipment and last year they purchased $60,000,000. These figures will be a surprise no doubt to plumbers, but then even this last amount is small compared to the future possibilities in a field which is comparatively untouched.

Most all these electrical systems are being marketed through local dealers or agents, some of whom are electrical contractors and dealers, some automobile salesmen and garage men, some hardware men, while some of the most successful dealers are plumbing firms. Kissel Bros., Hartford; Duerst Bros., New Glarus; L. G. Hickok, Lancaster; Reinhardt Bros., Brillion, and Wm. J. Schultz, Kilbourn, are a few of the plumbing firms in Wisconsin handling one manufacturer's line, while C. J. Ohlmacher, of Sycamore, and A. W. Murray, of Hoopeston, are prominent Illinois plumbers who are making a big success with it.

Perhaps for the next few months, due to conditions brought about by the war, the most open field for the plumber's activities is among farmers and in the rural communities. There his services are most needed. But where the farmer may be interested in installing water and a bathtub, he will just as quickly desire the other

conveniences that naturally go with them—that of electric lights and power. The two lines are almost indivisible. Where one goes, the other follows, and it is more economical for the farmer, and far more satisfactory to him, to have the best and most needed in sanitation and electric light and power, than take everything of one or the other.

However, from a practical point of view, the average farmer will listen readily to a proposition to relieve himself of manual labor and to take the place of paid farm hands. These latter are getting harder to find every day, and the farmer is being forced to look for something to take their places. Also the farmer boys and girls are not satisfied to remain on the farm, where there is so much hard manual labor and little of the advantages and conveniences of working in the cities. So the farmer is more easily reached than ever before, and there are less lightning rod agents and book agents than formerly to spoil his temperament. So when it can be brought home to him how easily power may be had for doing the many things about the house, how he may have water for the stock by turning a faucet, how it is going to make farm life attractive to his family and at a saving of money, too, and the many other things which could be mentioned, it is going to be easy to get his business in this line.

Water Supply and Light from His Own Plant Saves the Farmer's Time and Makes Him Happy.

He is, of course, first interested in a means of saving labor and getting more out of his hired help. This will appeal to him even though he determines that the other old ways may continue for awhile at least. But then, once he is started upward on the path of progress by desiring power, he will also sooner or later want a water system for his stock, then a bathtub and kitchen sink for his family. For the farmer proverbially thinks in terms of live stock, grain and other farm products—too often, self and family coming afterward. But he is a good-natured soul and clean in heart, and if he can be gotten away from these matters, there is no limit to what he may do for family and for his personal pride.

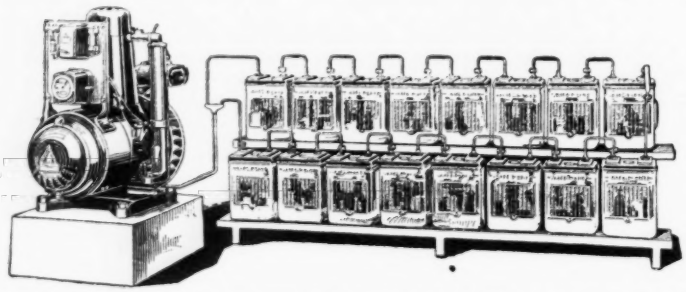
Careful investigations show that the farm lighting and power plants are quite suitable to be handled by the plumbing trade; that their simplicity and dependability are established and their splendid results tabulated, so that the trade need not fear one is doing a thankless and nonlucrative work with probably harmful results to his business and reputation. Plumbers in several states are already selling and installing various makes of electrical light and power plants, and along with them water systems and plumbing work generally. Recently a plumbing firm in an Illinois town did over one thousand dollars' business in the electrical line the first week it took on this work. Others are doing this too, and where there are competitors in the field for this business, the opportunity for quick results is greater, as one can alway reap some of the results of another's missionary work. In this field the plumber will find that competition is the life of trade. The farmer is naturally conservative, and a Missourian at heart—he must be shown. And where many are in a field is proof to him that a proposition has merit.

Good and efficient lighting plants may be had with necessary equipment for less than $500, and with the addition of from $100 to $200 the usual and necessary equipment for the utilization of power may be had. There are various machines and appliances of specialty manufacturers easy to be gotten, and which are adapted to these plants. These the farmer will purchase from time to time, the sale of which should prove valuable for the dealer. As a matter of fact the sale of these things, along with repairs and other acessory lines, will be a steady source of income in the future, as valuable as the original business itself.

One of the leading firms, manufacturing farm lighting plants only for the past two years, has furnished seventy thousand of them, and their sales are increasing rapidly. That is the story of every manufacturer of these individual plants. It is the story of the success of the manufacturers of pumps and water supply systems for farmers, and both these are being successfully handled by plumbers in various states. The manufacturers are giving no preference to what class they shall select as their dealers and agents, about their only standard being whether one has sales ability, or energy to go out into the field to see the prospect. The farmer may need plants, but since his business is farming, he directs his energies to that line, and is not going to run into town, hunting up plumbers or dealers. But it is the business of the plumber and dealer to hunt up the farmer and bring this business favorably to his attention. He is ripe for this business and will sooner or later thank the man shrewd enough and energetic enough to sell him, bringing so much practical uplift into his home and daily life.

From the technical side, the installation of the lighting system is exceedingly simple. The wiring required will be the biggest task connected with it. There are no plumbers who have not had enough general training and experience to pick up quickly the knowledge necessary to install and wire for the best advantage of the farmer. As for the mechanism of the plant, the farmer himself will need little instruction to operate and care for it, as the farmer will be found to have more knowledge of engines and machinery than any other class, than the mechanics themselves. And once the farmer gets a plant with the simplest wirings, he will do most of the future extended wiring to suit his needs as they arise to his fancy. The ease and simplicity of this installation make the field one very desirable for the plumber.

There are several good electirc plants on the market, each having its particular merits, but all satisfactory to handle. Each manufacturer has much printed matter, explaining in detail the plant and its various accessories for the information of prospective purchasers; and each has an advertising and sales department, devoted to aiding the dealer in selling its plants. Such are ever ready to do anything to aid their dealers or agents.



Engine, Generator and Storage Battery of Farm Lighting and Power Plant.

Once one has selected the system he intends to handle, he should secure one and fix up a sales and demonstration room. This plant as selected may be had on trial. As a part of the demonstration, one could use to advantage not only the electric lights; but an electric washing machine, an automatic water system, electric iron, toaster, cream separator, vacuum cleaner, sewing machine, feed cutter and grindstone, and such may be attached, or as many of them as possible; and to these might be added a bathroom, as complete as possible, or a tub at least should be attached to the water pump operated by electricity. The electric light system will suggest the need and aid the sale of a water pressure system for sprinkling the yard and garden, for watering the stock, for use in the kitchen, and most important of all for the plumber, it will necessitate sooner or later a bathroom in the farmer's home.

This field of endeavor has the approval of the federal government, for, during the war with so many restrictions on manufacturers, the government favored the installing in homes of farmers of modern heating, plumbing and electrical light and power systems, as it reasoned this increased the efficiency of farm production.

A PLUMBER WHO SELLS BATH TOWELS.

By I. R. Merritt.

WOMEN go to the plumber when their bathroom needs fixing, and for similar work in differet parts of the house. But if bath soaps, sponges, Turkish towels and other supplies are needed, generally a visit is paid to the nearest drug store.

It is taking a long time for the majority of people to discover that the modern plumbing contractor sells practically everything, so when he adds a line totally out of his field, he should double up his advertising efforts on the latest specialty.

The F. K. James Company, of New York City, could not be accused of neglecting to draw attention to their extensive line of turkish towels. In devoting a window trim to bathroom supplies, they took particular pains to emphasize the fact that they were also the headquarters of Turkish towels.

Of all the articles that are displayed on wallboards, one seldom or ever sees bath towels featured. Of course, the average department store window is usually roomy enough to allow for the reproduction of a modern home on a small scale, consequently towels can be draped in plentiful quantities over pedestals, chairs, tables and other supports, with several large bundles of towels on the floor of the window for good measure. The plumber is handicapped by having to display Turkish towels, etc., within the limited confines of a small window. But this fact need prove no detriment to an effective bath towel display, if the best use is made of the facilities at the plumbing and heating contractor's disposal.

This was amply evidenced by this Manhattan plumber's window trim. The left hand wallboard panel contained a towel hung out to its full length and covering the whole top of the first panel. Underneath, in the middle, was a towel rolled up and tied with blue ribbon. The bottom half was balanced by another towel being opened to its full length and was attached from one side of the first wallboard panel to the other side of the same panel. The wallboard panel at the far right hand side was arranged in the self-same manner. Draped over the top side of the first center panel was a neatly folded Turkish towel ready for use. The space below the towels was occupied by a large white card which announced:

"Good Turkish Towels, Prices Advancing All the Time, —75c."

At each side of the card was a towel rolled in bundle form and tied with red ribbon. Below the card at each side was a towel carelessly hanging from a nail inserted in the wallboard. The same arrangement was repeated on the second center panel, with the exception that the wording of the card was changed a little:

"Extra Large Turkish Towels. Special—75c each. Three for $2.00."

Down in front, toward the middle, reposed a small table, the wooden legs of which were cleverly camouflaged by turkish towels. Towels were also draped over the table top. On the table were bars of bath soap at fifteen cents apiece and wash brushes at thirty-nine cents. Leaning from the middle of the table to the floor was a large card containing the following information:

"Everything for the Bath at Lowest Prices."

In the front of the table, on the floor, were bottles of bath salts resting on an outstretched towel. At each side of the table was a small pedestal, draped with towels, with a roll of towels in bundle form on top, tied with blue ribbon.

The plumber who adds bath towels as a side line is not entering the dry goods business. He would be, if he were selling curtains and gowns. The addition of bath towels makes the plumbing establishment a more valuable adjunct to the community, since they are needed as much as soap, and if bath soap and other bathroom supplies, why not towels?

When Bills Don't Count.

Having made his payments for Liberty Bonds, war chest, rent, coal, gas and groceries, the poor man was broke. But he needed winter clothes, so he compromised by digging through a closet and unearthing a heavy vest that belonged to a winter suit he had worn some years ago. He brushed the vest off and felt in the pockets.

Eureka! A discovery!

In the inside pocket of the vest was a roll of bills amounting to $123.

And not one of them was receipted.—"Cincinnati Enquirer."

EXPANSION *of* STEAM PIPES

Notes on the Different Methods of Taking Care of Expansion in Steam Pipes in Heating Plants

By Charles L. Hubbard

(Continued from Page 201 in the January 25th Issue.)

Expansion Joints.

While, strictly speaking, spring loops and swivels are included under the general term of expansion joint, this is usually applied especially to slip joints and those employing corrugated shells or diaphragms.

Joints of this general type are only made use of in connection with long straight runs of heavy piping, as in central heating plants or where sweep bends or offsets would be very expensive or awkward owing to the length required with especially large diameters of pipe.

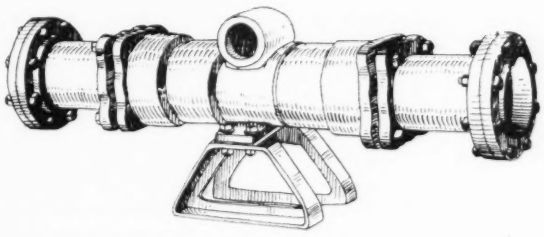


Fig. 13.

A typical double slip-joint is shown in section in Fig. 13 and illustrates the general principle of design and operation. This is similar in construction to the piston rod and stuffing box of an engine or pump. The barrel should be of brass to prevent rusting, and adjustment is secured by means of bolts and nuts. Joints of this type are also made single, that is, with a gland and sliding member at only one end instead of at both ends, as in Fig. 13. This is more expensive to construct for a given amount of expansion but may sometimes be used to advantage in certain cases, as will be shown later.

Slip joints are now little used except with very large pipes and where space prohibits long radius bends. When employed the pipe must be securely anchored to prevent the steam pressure from forcing the joint apart and at the same time to permit, when expanding, a free movement in the stuffing box. Sagging of the pipe on either side, which might cause binding in the joint, is prevented by suitable supports.

Under ordinary conditions expansion joints of this type should be so spaced that the maximum slippage will not exceed 5 or 6 inches. Assuming an average expansion of 1.5 inches per 100 feet of pipe for ordinary heating work will call for expansion joints every 300 or 400 feet to meet the above requirements.

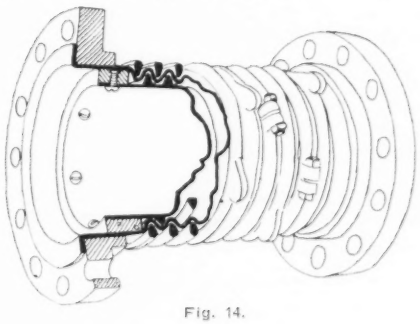


Fig. 14.

The joint shown in Fig. 14 is made up of a length of copper pipe with deep corrugations, reinforced with steel rings. The trouble with this joint where the pressure is more or less intermittent, is that the movement in the copper is liable to result in fracture at the corrugations. If the joints are placed sufficiently close together, so that the elastic limit of the copper will not be exceeded during these movements, the joint should prove durable, especially in heating systems supplied through a reducing valve, where the pressure and temperature of the steam remains practically constant.

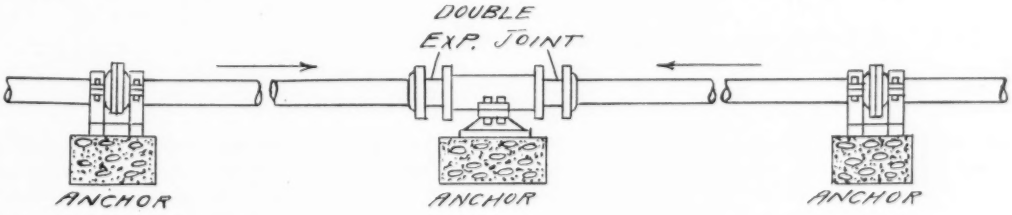


Fig. 15.

In another type of joints the expansion is taken up by flexible copper diaphragms of special form enclosed in an outer shell of cast iron. With such an arrangement the stuffing boxes are avoided and adjustments unnecessary,

which is a matter of considerable importance in the case of underground mains.

Anchors.

In order to distribute the expansion evenly among the different offsets and joints it is necessary to anchor the pipe at regular intervals.

There are various methods of doing this, one of which, in the case of straight runs, is shown in Fig. 15. In this

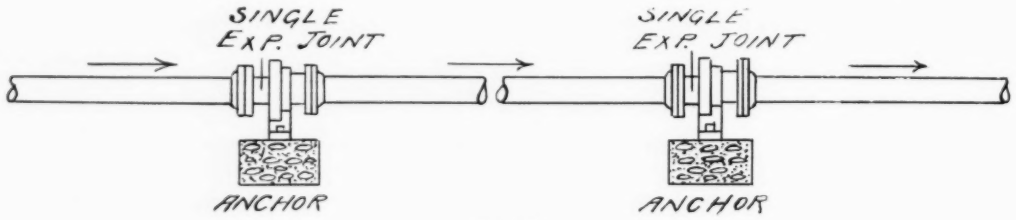


Fig. 16.

arrangement the pipe is anchored midway between the joints, thus allowing expansion to take place in both directions from this point.

Where two of these sections meet, a double expansion joint is provided, into which the ends of the pipes, extending from the points of anchorage, are inserted. The center or stationary part of the joint is also anchored and service pipes or lateral branches taken from this point. Another method is to combine the anchor and expansion joint in a single fitting without the use of the separate intermediate

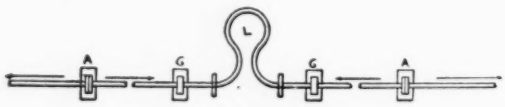


Fig. 17.

anchor. Such an arrangement is shown in Fig. 16, where each unit consists of an anchor, a single expansion joint, and a service outlet if required. The expansion of each section in this case is in the same direction, as indicated by the arrows.

The location of anchors for lines containing expansion loops is shown in Fig. 17, in which AA are the anchors and GG the guides to keep the pipe aligned. The arrows indicate the direction of expansion. When it is desired to use shorter loops, they may be placed close together and the expansion made to take place continuously in one direction as in Fig. 18, which shows the arrangement of guides and anchors with reference to the loop.

Fig. 18.

The location of anchors in connection with loops and offsets in engine and boiler rooms, where space is limited and the piping is run in an irregular manner, according to local conditions, is a matter which must be decided by the fitter upon the ground, as the layout and conditions will vary so widely that no general scheme can be followed as for straight runs of pipe.

Mains and heavy pipes, as a rule, should be anchored close to the point where a large branch is taken off, provided all parts of the piping system are free to expand from this point, either by means of expansion joints or flexible offsets.

The best form of anchor will depend upon the location of the pipe and what there is nearby to tie to.

A method frequently employed for an overhead pipe is shown in Fig. 19. Rods provided with turnbuckles at the center, and eyes at the ends, are bolted to either side of a flange joint, as shown, and carried back to the flanges of overhead I-beams as indicated. If the piping on either side of the anchor is fairly flexible so that the strain will not be excessive, a clamp may be placed around the pipe for attaching the anchor rods instead of using a flange, unless the latter happens to come in approximately the right position. In the case of heavy piping, made up with flange fittings a joint will usually be found adjacent to the desired point of anchorage.

When the main is carried near the ground the pier form, shown in Fig. 20, may be used. In this case a special fitting is employed, to which the pipe ends are bolted and which is also provided with a flange or base plate for bolting to a concrete pier of sufficient size to furnish the necessary anchorage.

When the pipe line is laid in a trench, the arrangements, shown in Figs. 21 and 22, may be used, which are self-explanatory.

There is a great variety of anchors in use, but those shown will serve to illustrate the general principles to be followed under different conditions. The required strength will depend upon the size of pipe and the force necessary to spring the offsets or branches beyond the point of anchorage. In general, pipes of any considerable size should not be anchored to building construction, unless it is a very rigid portion, such as a foundation wall or heavy pier where the strain due to springing the pipe will be small in comparison with the strength of the building member, to which it is anchored. In anchoring power plant piping great care must

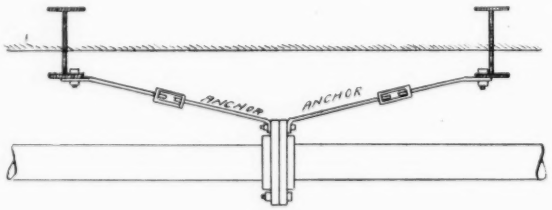


Fig. 19.

be taken not to transmit vibrations to the building, this being very likely to happen, where highspeed reciprocating engines are used, unless special precautions are taken to prevent it.

Cold Strain.

Another point in connection with expansion, which should be mentioned, is what is known as "cold strain" in erecting a system of piping. This is for reducing the expansion strains when under steam pressure, and consists in cutting the lengths of pipe a little short so that when cold the piping will be strained in the opposite way from what it will be when hot. If the cold strain is 50 per cent of the normal expansion, the pipe will be strained 50 per cent, in what may be called a negative direction when cold, and 50

per cent in the opposite or positive direction when hot. By this means it is possible to reduce the strains in a pipe to half the normal strain of expansion and thus reduce the necessary allowance for the same in this proportion.

In some ways there are advantages in making the cold strain greater than 50 per cent, for the system is usually under steam pressure and therefore hot most of the time.

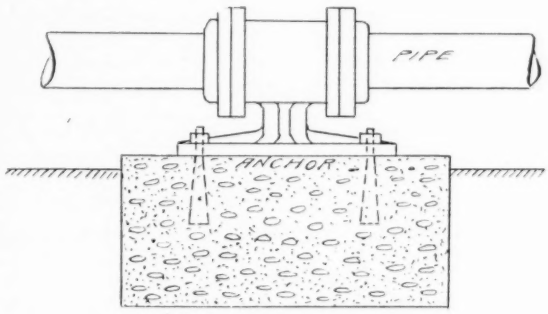
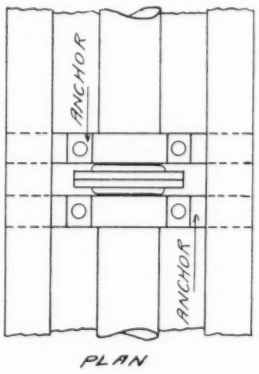


Fig. 20.

If, for instance, the cold strain is just equal to the expansion, then the pipe is under strain when cold and entirely free from strain when hot.

Another advantage of the cold strain system of pipe erection comes from the fact that when it is desired to disconnect a joint for repacking or other repairs, the joint will open up of itself, as soon as the bolts are removed, when cold, thus making it an easy matter to insert a new gasket without forcing the flanges apart, which is necessary and often difficult when the ordinary method of installation is



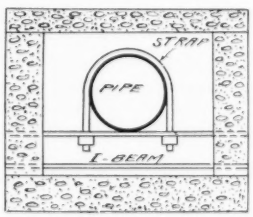


Fig. 21.

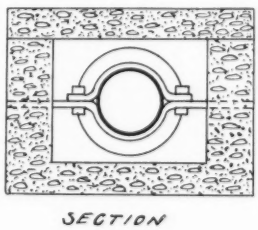


Fig. 22.

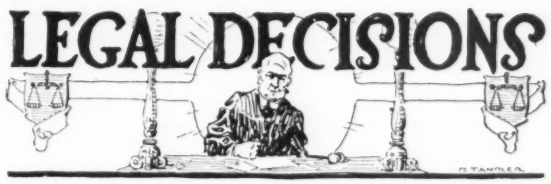
used. This is especially desirable in high-pressure work, where tongue and groove flanges are used.

It must be remembered that cold strain cannot be used in long runs of straight pipe for it is evident that it would be impossible to *stretch* the pipe by drawing up the flange bolts. This can only be applied to cases where offsets and bends are to be sprung slightly out of line by the effect of expansion.

Comparison.

"It's just as wrong to gamble when you win as when you lose."

"Yassuh," asserted Mr. Erastus Pinkley. "De immorality is jes' as great, but de inconvenience ain't."—"Washington Star."



Rights of Seller Fraudulently Induced to Enter Into Contract.

One who has been fraudulently induced to enter into a sale contract may repudiate the contract, and, tendering back what he has received under it, may recover what he has parted with, or its value; or he may affirm the contract, keeping whatever property or advantage he has derived under it, and may recover in an action of deceit for damages caused by the fraud. As a general rule, he cannot treat the sale as void, in order to recover the price, and as valid, in order to recover damages; the remedies being inconsistent.—Supreme Court of Nebraska, in Baker vs. Thomas, 167 Northwestern Reporter, 407.

Private Settlements Between Partners.

The general rule, which applies to private accountings and settlements between partners, is that it is binding and conclusive upon them, in the absence of its procurement by fraud or mistake, and the partner who impeaches it must take the burden of showing an inaccuracy in the settlement to which he has assented.

Where both parties are acquainted with the partnership affairs, and neither reposed any special confidence in the other, a partnership settlement between them is considered especially conclusive, but if one of the parties has an accurate knowledge of the business and the facts and circumstances of the transactions, and the other is substantially without knowledge of it and relies with confidence upon his partner, a settlement is esteemed less conclusive as against the latter.

In the making of the settlements of the partnership affairs, each partner, being an agent of the others touching anything within the scope of the partnership business, has a right to rely with confidence upon the other, and to have from the other the fullest disclosures touching any partnership matter as much as in the conduct of the partnership business; and hence any fraud or mistake, which induced additions to or omissions from the settlements, or where facts of the partnership business relating to items improperly added or omitted are exclusively or nearly so within the knowledge of one of the partners, and the other knows but little of them, and they are withheld by the one having knowledge of them, and he secures an advantage by such concealment without having made any misrepresentations, or where an advantage is secured by one partner by a failure of that high degree of good faith and fair dealing which is required of the partners in transactions with each other, resulting in substantial injustice; or where a mutual mistake causes an addition to or omission from the settlement, or where a partner is misled by an innocent misrepresentation and a mistake occurs from it, which results in a substantial injustice and injury, relief may be had as to the items which are improperly added or omitted.—Court of Appeals of Kentucky, in Chambers vs. Johnston, 201 Southwestern Reporter, 488.

Little Rock, Ark.—The Central Heating & Mfg. Co. has moved its office from 115 West Fourth Street to 417 Main Street.

Blackfoot, Idaho.—The plumbing firm of C. L. & P. W. Boyle has been dissolved.

SOMETHING ABOUT AIR CHAMBERS *in* PLUMBING SYSTEMS

How Self-Replenishing Air Chambers Should Be Installed and Where They May Be Located

By Robert J. Gordon

(Continued from Page 126 in the January 18th Issue.)

IN a recent issue of "Domestic Engineering" we illustrated and described some forms of air chambers and methods of recharging same. We explained the necessity of air chambers on a long house service line, which supplies a faucet in a barn from a street main 300 feet away.

That chamber was to prevent water hammer by cushioning the blow when faucet is closed.

In another instance we illustrated and described the application of an air chamber on the discharge end of a positive displacement pump, explaining how to replenish same with air periodically.

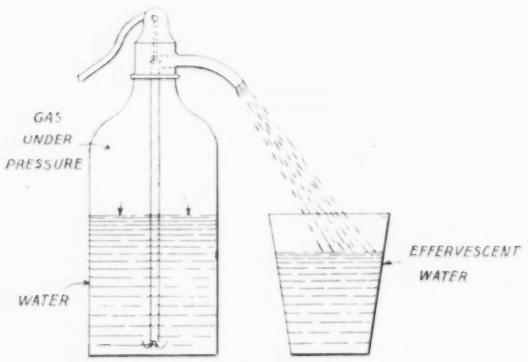


Fig. 1.

That air chamber was for the purpose of steadying up the flow from a pump, which discharges water intermittently, as is the case with many plunger and piston pumps.

These were all right in a way. They are perhaps about the best we can do in such cases. But they require periodical attention. They will lose their air in the course of time and service. Then they must be re-charged with air.

Now we will see what can be done in the way of providing air chambers, which will not require to be re-charged. That is the kind we should always plan to install in residence work, and wherever it is possible to adopt them.

In our line of business we should always aim at installing our work so that it will be as free from necessity for attention as possible.

We should never install anything, which will require periodical attention from the occupants of a building, if it is possible to avoid it.

Air chambers are no exception to that rule.

How to do it, of course, is the important thing to know, —that is—how to do it without unnecessarily increasing the cost of the installation.

To understand this thoroughly and thus be able to grasp the opportunity to install a self-refilling air chamber when it presents itself, we must first consider and know some of the physical properties of air and water. Knowing these, we should be able to apply them in a practical way by our mechanical knowledge.

Air and other gases are soluble in water. The proportions, however, are variable. By solubility in water we mean that the water will absorb the air, or other gases, in much the same way as it absorbs salt or sugar.

Put a lump of sugar in a cup of water and see what happens. The sugar melts and is taken up by the water. It does not change the color of the water. It only changes its chemical, and perhaps bacterial composition and contents.

Nobody knows the sugar or salt is in the water except by taste, or some other test. If, however, an excessive amount of sugar is put in the water, that is more than the water can take up in solution, the remainder may lie in the bottom of the cup undissolved, or, if the temperature has changed favorably, the excess sugar may be in the form of a syrup. That is an extreme. We rather like the idea of quoting extremes when trying to explain a principle, because they make a stronger and more lasting impression on the mind of the reader. They are less likely to be forgotten

Now let us consider an extreme case, which will illustrate fully and forcibly the principle of the absorption of gases in water, remembering that air is nothing but a mixture of gases.

You have all, at one time or another in your lives, taken your best girl into a drug store and treated her to a "soda." You have noticed the water issuing from the fountain "fizzed" and sparkled in a lively manner. Of course, you just called it "soda water," because the druggist has the name printed on a card somewhere in sight, and everybody calls it that.

If you take an ice cream soda, or a chocolate soda, or any other soda that is mixed with anything that hides the bubbles in the water, you do not get the best kind of a lesson on the solubility of gases in water. The concoctions hide the action of the gas. Order a plain soda and watch

it. You will observe air, or gas bubbles, rising up through the water and bursting at the surface. That ebullition will continue for some time. Then the water will appear dead or flat. Only a few small globules of gas seem to stick to the side of the glass, and occasionally breaking loose and rising to the surface.

Now hold the glass firmly in your warm hands and heat the glass. Note how the bubbles begin to rise to the surface again. Dip the glass in hot water and see the ebullition increased. That tells the whole story with respect to the solution of air in water and its liberation by temperature.

This is what really happened. The druggist has the city water tapped to his fountain. It is clear and clean. Perhaps it is filtered. He injected carbonic acid gas into the water before it entered the glass. He put in more gas than is required to saturate the water under atmospheric pressure. Therefore, when the carbonated water is drawn, it allows all the gas to escape which it cannot hold in solution. If the gas was heavier than the water, it would lie in the bottom of the glass like the aforesaid sugar in the cup. But it is lighter and therefore escapes, from the surface, into the atmosphere.

Consider the case of a seltzer bottle. Fig. 1 shows such a bottle in action. I will not tell you at this late hour just what that kind of a bottle has been famed for because the country is going dry in July, and I am sure the information will not do you much good now. Suffice it to say that the liquid is like pure water, and carbonic acid gas is forced into the liquid under pressure. The liquid is sealed tight in a strong bottle, which has a cap with a spring valve on top and a spout at the side. The space above the water contains gas under pressure.

When the valve is opened, the gas pressure pushes the water up the inner tube and out of the nozzle, the glass receiving the liquid suggests the rest.

Water at atmospheric pressure and ordinary temperature

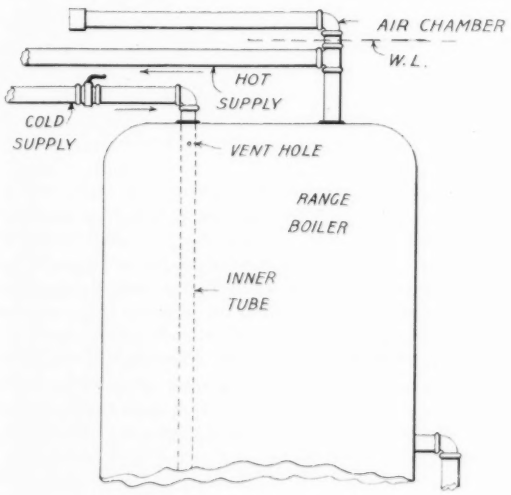


Fig. 2.

takes up about its own volume of carbonic acid gas, and about 4 per cent of its volume of ordinary air. If the pressure is increased on atmosphere, the quantity of gas or air capable of being absorbed by the water is about doubled. A greater pressure means a correspondingly greater capacity for absorption of gas or air.

Water charged with air to its full capacity at, say, 100 pounds, will effervesce when the pressure is released, just like soda water at a fountain, or seltzer in a bottle. And water charged with gas or air to saturation point, when cold, will give off gas or air bubbles when heated, just like a glass of cold soda water, when it is warmed.

These are all natural facts. Now let us see how we may use this information to advantage in plumbing work with reference to air chambers.

Let us see how we can catch the gas bubbles liberated

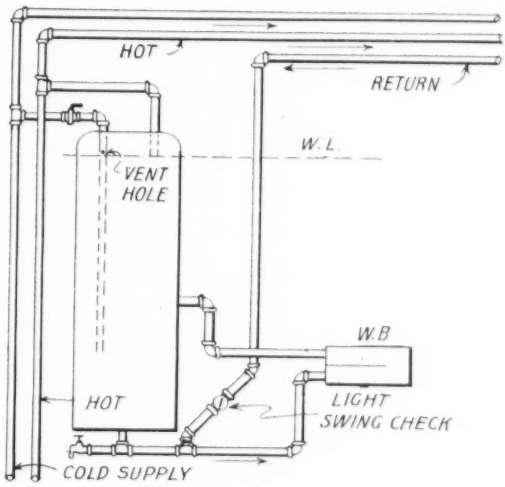


Fig. 3.

from the water and use these bubbles for replenishing air chambers.

In doing this we have to keep four things in mind: 1. That air bubbles are liberated from water when heated. 2. That the less the pressure the greater will be the volume of the bubbles so liberated. 3. That the path of the bubbles must be guided toward the air chamber. 4. That the air chamber must be located to catch these bubbles and retain them, also to act as an efficient elastic cushion to prevent water hammer in the piping and relieve unduly heavy shocks on range boiler or other vessels or apparatus comprising the water supply system.

If these four points are attended to, there should be no difficulty in obtaining sufficient self-replenishing air chambers on any ordinary plumbing job to permanently prevent water hammer.

In searching for suitable locations for the air chambers, we naturally turn to the water heater as the starting point. That is the place, where the air bubbles may first be liberated, and generally speaking, they are believed to be liberated there in abundance if the job is a low pressure job. If it is a high pressure job and if the water is circulated, they may be liberated mostly near top of building, because the pressure is much lower there than in the basement, where the heater may be located.

On a low pressure job, therefore, we would place an air chamber about the hot water storage boiler or heater somewhere.

Take the case of a private residence, having a range boiler heated by one or more active heaters. They all deliver into range boiler. Gas, liberated at either heater, finds its way into range boiler, or at least, into the hot water pipe leading from its top. Naturally then we would place an air chamber over range boiler, not on the cold water pipe, but on the hot water pipe.

It must, however, be arranged so as to catch the gas

bubbles and trap them; otherwise it will not be much better than any ordinary air chamber located in any ordinary non-refilling position.

Fig. 2 shows how such a chamber may be applied. If there is enough head room to run it vertically, you may do so. Fig. 2 shows it run horizontally over the hot supply line in order to get a long air chamber in. The bigger the chamber the better the cushion. The writer has put them in this way using 1½-inch to 2-inch pipe for the chamber part and making it several feet long, according to the liability of water hammer. They have always been satisfactory. He has never had any trouble with brass chambers.

In Fig. 2, W L represents what probably is about the working water line. Above this line is compressed air. Under it is hot water. This cushion is located about the

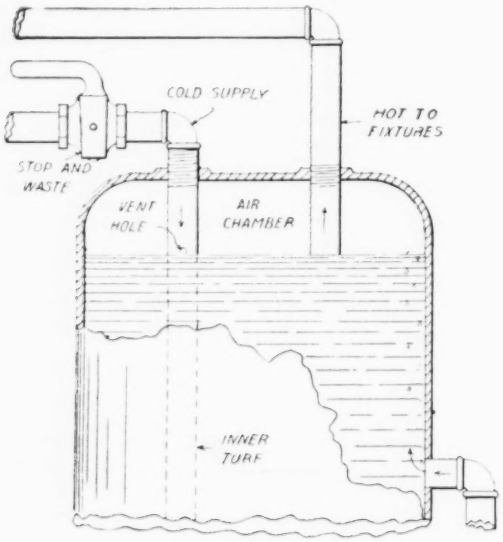


Fig. 4.

middle of the system and certainly helps to cushion the whole job from street main in to the fixtures. Furthermore, it will ordinarily be self-replenishing and always operative.

If the air chamber is taken off the side of the upright nipple over boiler, then it will not be self-replenishing. The air bubbles will then rise in nipple, pass the mouth of the air chamber, and get into the hot supply line. They will then be drawn off at faucets with the water, and their value is lost.

Now let us look into a somewhat new wrinkle and see how we can obtain a capacious air chamber right in the boiler itself. It certainly is a rational idea to utilize part of the range boiler as an air cushion for the system, particularly in cases where the boiler can spare such reduction of its water storage capacity.

Fig. 3 shows a range boiler connected up this way. Cold water is fed to boiler in the ordinary manner through an inner tube. The hot water pipe connects to top of range boiler in the ordinary manner, except that a short inner tube, say, 3 to 6 inches long extends down into the boiler. This tube is screwed air tight into the boiler spud just like the cold water inner tube. A detail of this is shown in Fig. 4, although the spuds are not shown.

Note that the vent hole in cold water inner tube is about level with open mouth of the hot water drop tube. It is evident that by this arrangement a good-sized air chamber can be secretly formed inside an upright range boiler which will be refillable with air from water backs or other heaters. Note the little bubbles of air rising from mouth of hot flow pipe from heater. That is what refills the chamber and makes this plan worth while.

Look at Fig. 3 again, and let your imagination loose. Is that not a nice simple proposition with all the essential elements of a first class modern job? Circulation is run to bathroom on second floor but not shown. A light swing check on the 45 degree is placed on circulation pipe near boiler. And boiler, as well as the entire water supply system, is well air chambered.

It seems to be a sensible plan. If any of the readers of "Domestic Engineering" can improve it, the writer would like to hear from them.

The matter of working in self-replenishing air chambers for horizontal hot water storage tanks, with tank heaters, and in the piping system in general will be considered in a future issue. There is an art in developing and locating air chambers of this type, and we think the trade will be interested and benefitted by a full and complete treatise on it. So look out for the next chapter!

THE ENORMOUS WEALTH OF THE UNITED STATES.

Despite the pangs of readjustment through which the country is now passing, the people of the United States, taken as a whole, were never in a better position to contribute to a Government loan than they will be when the Victory Loan is offered in the spring.

The country has enjoyed—and will soon again enjoy—an unparalleled prosperity. There must, of course, be a period of transition. Producers and wholesalers still have goods made and bought at the peak of the war-time price advance. They naturally wish prices sustained until they can get out from under. Consumers, on the other hand, know that lower prices are inevitable, and are witholding orders. This leads to temporary idleness and to unemployment.

But the pause is only temporary. The nation has a bottled-up demand for commodities of all kinds—accumulated during the year or more of war conditions that made it impossible to get supplies for general consumption, or that forced the price level to prohibitive heights. In all lines, therefore, the public is now awaiting a return to practical conditions to begin a great buying campaign.

Everybody has money. On December 1, 1918, the per capita supply of money had reached the highest point ever known—$56.23. Compare this with the same date in the year 1879—$16.92. The Government is borrowing in huge amounts, but the wealth of the nation has grown enormously. Even in eleven months the amount of money in circulation for every man, woman and child in the nation increased from $48.76 to $56.23. The total stock of money in the United States increased in the twelve months of 1918 by $1,524,595,335. The investment power of the people at large is now greater in the United States than it has ever before been in the history of any country.

The latest bank report is sufficient answer to the gloomy plaints that are now being heard from individuals who cannot see beyond the short interval of readjustment for which the nation has now paused. The latest bank figures show that the American people have accumulated a mass of wealth such as no other people ever possessed. The public could subscribe a $12,000,000,000 loan in April, if a national crisis made this necessary, with little real hardship in any quarter.

With those figures before him, who shall say that America is unable to float another Liberty Loan?

REQUIREMENTS *and* STANDARDS *for* HEATING *and* VENTILATION

Report Covering Requirements and Standards for Heating and Ventilation by Werner Nygren, Chairman, and Dr. Rudolph Hering, Both of New York, One of the Divisional Committees of the National Committee of Welfare Work, Council of National Defense

A REPORT of more than ordinary interest has just been issued by the Government Printing Office in Washington under the title of "Requirements and Standards for Heating and Ventilation." This report, which thus receives official endorsement, is intended to apply to peace as well as war conditions, and it will therefore be read with interest by every member of the heating trade. Its principal portions follow herewith:

Scope of Needed Regulations.

In approaching the subject of regulating heating and ventilating we are confronted with two separate problems, one of meeting the requirements in new buildings and the other of meeting the requirements in old buildings already in use and oftentimes utilized for an entirely different purpose than that for which they were orignally constructed.

For new buildings laws can be enacted to cover heating and ventilating along lines similar to those controlling building construction and plumbing, except that the laws for heating and ventilating can not be equally definite. Existing building laws governing both construction and plumbing work can be enforced almost literally with few exceptions. It may be assumed that 90 per cent of the work can be carried out in strict accordance with predetermined standards, leaving only about 10 per cent to the judgment of the officials, whereas in the matter of laws for heating and ventilating only a small percentage of work can be done according to predetermined standards, and the greater percentage will have to be done in accordance with judgment of special conditions.

Recommendations.

It is the sense of this report that if substantial results are to be obtained, the following procedure be taken:

First. That the Committee on Welfare Work of the Council of National Defense send a notification to all employers and owners of industrial establishments that this national body is actively engaged on measures for securing proper ventilation of all working quarters for the maintenance of health and comfort of the employes. It should also explain the necessity of the contemplated measures which will be undertaken for the purpose of creating a high health standard for the country's army of workers at home, and thus conserve and prolong lives to compensate for those lost on the fighting front. It should furthermore point out that there is no special reason to fear that the proposed measures will involve inordinate expenses inasmuch as proper ventilation usually produces results in the way of increased working efficiency sufficient to pay for itself, besides contributing to the conservation of the nation's strength.

Second. That a persistent educational campaign and agitation be inaugurated by publishing articles on ventilation written in such simple language as may be readily understood by those who have no previous knowledge of the subject. Such articles should explain the benefits derived from proper ventilation and should be followed by statistics of health standards obtained from striking instances of well ventilated and poorly ventilated establishments. To exert the correct and desired influence all articles thus published should be along scientific lines but as free as possible from conflicting theories where these might lead to lack of confidence on the part of practical business men as to the result which can be secured.

Third. That consideration be given to the establishment of a bureau to supervise and control all matters pertaining to ventilation, and to gather and tabulate statistics of the respective health conditions. In connection with such a bureau there should also be a laboratory for research and testing work, in charge of a competent and well paid personnel, to inspire the confidence necessary to prevent failure. Such a bureau, we believe, will sooner or later have to be provided, and we feel sure that its creation would be appreciated by every health board and health association in the country.

Fourth. That the question of standards and their limitations be determined by the above suggested bureau according to results of its research work.

Limitation of Window Ventilation.

The recognized limitation of ventilating by opening windows is mainly responsible for the development of the mechanical methods. In crowded establishments the windows can not, under unfavorable weather conditions, be kept open sufficiently to accomplish the necessary air dilution without harmful and disagreeable drafts and chilling effects, and, moreover there are not always winds or other agencies to force in the required amount at such times as open windows can be tolerated. In other words, window ventilation is not to be depended upon nor can it be effectively controlled, and for this reason, it usually requires to be reinforced with positive and reliable agencies which will work when the natural agencies fail or are found insufficient.

This statement is not intended to imply that no ventilation can be secured through opening of windows, nor is it intended to support the old theory that the opening of windows destroys the effect of mechanical ventilation when such is operating. From a hygienic point of view a room can not possibly have too many windows, nor can they be opened too often or too much when the external weather conditions permit this to be done without discomfort.

Opening of windows is often sufficient for ventilating small offices and private rooms where the occupant or occupants are at liberty to manipulate the windows for interchange of air to suit their own comfort, but in crowded establishments, where this is obviously impossible, open win-

dows can not be tolerated except under the most favorable weather conditions. It is for this reason that additional means must necessarily be provided.

Value of Window Ventilation.

In order to meet the situation intelligently, proper allowance should be made for the influence windows have on the indoor atmosphere; firstly, as to the unavoidable air leakage, which secures some ventilation even when the windows are closed; and, secondly, to the sterilizing effect which is obtained by the sunlight.

It is obviously unnecessary to provide any additional means for ventilating when the total window area is of such proportions that the accidental air leakage through the windows is sufficient for the supplying of the requisite air. It is equally obvious that rooms having inadequate windows for accomplishment of this dilution need additional means for the supplying of the requisite air when the windows can not be opened without causing harmful drafts and discomforts to the occupants. Also that rooms having no windows or skylights whatsoever, particularly if such rooms happen to be interior rooms without any wall exposure, require to be specially well ventilated by mechanical means.

Importance of Design.

The matter of design is in every case as important and vital to a successful accomplishment as the air quantities supplied. Many ventilating and heating installations which are ample in capacity are nevertheless inadequate on account of faulty arrangements due either to lack of study and consideration as to important details or else to lack of understanding by the parties responsible for the design. The heating and ventilating science is often considered so simple that the design of the apparatus is intrusted either to parties having little or no previous experience, or to manufacturers who are mainly interested in finding a market for their special appliances and who consider their duty accomplished when the apparatus they furnish delivers the quantities of air and heat contracted for. Yet the fact is, that if the apparatus is to be successful in maintaining proper atmospheric conditions, too much attention can not be given to detail of the arrangement of the apparatus and the distribution of the heat and the air introduced for ventilation.

Standards for Heating, Ventilating and Air Moistening.

The following are the minimum requirements for the maintenance of acceptable conditions in all classes of factories, rooms, and spaces devoted to industries.

Under the head of working rooms are included offices, stock, sorting, shipping, wash, dressing, locker, and toilet rooms.

Space Per Occupant.—Two hundred and fifty cubic feet of space is the minimum for each occupant on the basis of the workroom being 12½ ft., or less in height. If the room height is higher than 12½ ft., at least 20 sq. ft. of floor space shall be allotted for each occupant.

Ventilating Requirements.

Rooms having windows whose area is equal to or in excess of 21 sq. ft. per occupant and which can be opened directly to outdoors do not require mechanical means for ventilation, except when injurious substances are generated or released to the room air or if undue heat is generated in such rooms.

All interior rooms, and rooms having less window area than 21 sq. ft. per occupant require apparatus for mechanical ventilation which is to be operated whenever the rooms are occupied, except that such apparatus need not be operated when the external temperature and weather conditions permit keeping the windows wide open, provided the total window area is 5 sq. ft. or more per occupant. A positive supply of outdoor air from an uncontaminated source shall be supplied to each room under this class, the amount of which shall be as stipulated in the following paragraph and distributed in such a manner as to maintain the stipulated temperature without harmful or disagreeable drafts. Sufficient means shall also be provided for each room for exit of air corresponding in amount to the amount of fresh air supplied. The exit openings shall be so arranged that the movement of the air will be given a direction whereby it will come into maximum contact with occupants of the room, and shall, when necessary for satisfactory results in this respect, be provided with mechanical or other positive means for exhausting the air.

All rooms having a total area of windows opening directly to outdoors amounting to less than 21 sq. ft. per occupant require to be supplied with fresh air in the quantity of not less than 100 cu. ft. per occupant per hour for each square foot of window area lacking, with the exception that whenever mechanical ventilation becomes necessary in compliance with this provision the minimum amount supplied shall be not less than 600 cu. ft. of air per person per hour.

All rooms above the ground level having wall or ceiling exposure but no windows require to be supplied with 2,100 cu. ft per occupant per hour.

All interior rooms having neither exposure nor windows opening directly to outdoor require to be supplied with a quantity of air per hour equal to five times their cubic contents, plus 1,200 cu. ft. per hour for each and every occupant.

All underground rooms having neither exposure nor windows opening directly to outdoors require to be supplied with a quantity of air per hour equal to six times their cubic contents plus 900 cu. ft. per hour for each and every occupant.

Toilet, coat, and locker rooms require mechanical ventilation capable of exhausting air from such rooms in the following amounts:

Toilets, at least 10 complete air changes per hour, plus 1,500 cu. ft. per hour for each water-closet and urinal fixture.

Locker and coat rooms, at least six complete changes per hour, plus 600 cu. ft. per hour for each locker or each person's wearing apparel.

Sufficient air inlets for inflow of air to replace the air exhausted must also be provided for such rooms.

Areas of doors and skylights which can be freely opened may be considered equivalent to window area.

Removal of Injurious Substances.

Where dust, fumes, gases, vapors, odors, fibers, or other impurities are created or released in the course of manufacturing or processes carried on in the working spaces, tending to discomfort and injury of health of the occupants, there shall be special mechanical or otherwise positive means provided for removing such substances as fast as created or released.

In case of inability to completely collect and remove such injurious substances by the above specified means, additional ventilation will be required for dilution of the atmosphere beyond the standards given above as will be required to maintain its purity. The percentage of injurious substances permissible in the atmosphere should be determined by chemical analyses by the medical authorities. This provision shall cover all gas burned for illuminating or other purposes from which the products of combustion are released to the indoor atmosphere, and the allowance for such contamination by gas, etc., must be not less than 1,800 cu. ft. of fresh air per hour for each cubic foot of gas burned within the room.

When, in the opinion of the proper authorities, the fresh air supplied for the ventilating purposes is dust-laden to the

extent of being unhealthful and unsuitable for ventilating purposes, it shall be filtered or washed by suitable appliances capable of removing dust and other mechanical impurities.

Excessive Temperature and Humidity.

Excessive heat generated by manufacturing processes shall either be confined by application of non-conducting material or be collected and carried off in the same manner as described for the injurious substances.

Excessive heat or humidity or a combination of the two when sufficiently high to be injurious to health must be counteracted or reduced so that the relative humidity will not exceed 65 per cent when the temperature exceeds 75 degrees F., except when outdoor weather conditions prevent or when the working quarters are used for special purposes which, in the opinion of the proper authorities, require or make advisable other degrees of humidity.

Minimum Humidity.

The minimum relative humidity for the stipulated temperatures shall be not less than 20 per cent and suitable air moistening appliances, which shall be controllable either by hand or automatically, shall be provided in the rooms or in connection with the ventilating apparatus for accomplishing the desirable air moistening effect.

Heating Requirements.

The temperatures in all factories, mercantile establishments, mills, and workshops require to be maintained at a uniform degree consistent with reasonable requirements of the manufacturing processes, ranging from 62 degrees F., which is the minimum for rooms in which manual labor is performed, to 72 degrees F., which is the maximum for rooms in which clerical or mental work is performed.

Apparatus for the required heating must be installed and operated to maintain the temperatures and be controllable within the stipulated temperature range and such apparatus must be of a character and type to cause no contamination of the spaces it heats.

All direct heating surfaces placed in rooms for heating purposes shall be so located and arranged that the heat radiation from the same will not cause discomfort or injury to the occupants.

When warm air is used as a heating medium the same must be so introduced and distributed as not to cause discomfort to the occupants. Warm air for heating must not be supplied at temperatures higher than 130 degrees F.

Open salamanders must not be used under any circumstances.

Gas or oil heating appliances discharging their products of combustion into rooms must not be used unless a sufficient amount of fresh air is supplied to compensate for the vitiation of the air caused by the combustion. Gas heating appliances can be used without additional air supply being necessary if the products of the combustion are completely collected at the points where generated and carried off to the outdoor atmosphere.

Requirements for Dwellings.

While it is as important to maintain pure atmospheric conditions in the homes as in the working quarters, it is neither reasonable to advocate mechanical appliances for ventilation of such quarters nor practicable to install same. We all know that both living and sleeping rooms, even of the dormitory kind, can be effectively ventilated by opening of windows if ample room is allotted per person. Consequently all measures for securing the betterment of conditions for living and sleeping rooms should be along the lines and standards of ample room sizes and liberal window space allotment per occupant. Along these same lines interior and underground rooms without windows opening directly to outdoors should not be permitted to be used for living and sleeping quarters under any condition.

As to the heating, ample provision should be made so that each and every room used for living and sleeping purposes can be heated to a comfortable temperature in the most severe weather. Sleeping rooms, which may usually be kept at somewhat lower temperatures, still require ample provisions for warming up in cases of illness of the occupants. The recognized average standard for heating of living quarters is 70 degrees F., and this committee is of the opinion that it would be well to adhere to this standard, so as to have a certain surplus that will permit windows to be kept partly open.

As to the method of heating, hot water, steam, furnace, and open fireplace heating, and even stoves, can be considered satisfactory when ample in capacity and properly installed. Individual control of the heating for each room is very important, so that the heat can be distributed in accordance with the requirements. Heating by gas radiators and oil stoves, which release products of combustion into the room atmsophere, should be prohibited for permanent heating of living and sleeping rooms, inasmuch as they produce gases which are both disagreeable and injurious.

A matter which is fully as important as the methods used is an understanding on the part of the inhabitants as to the atmospheric requirements from a hygienic standpoint. Much good can be accomplished by supply of information regarding the necessity of keeping windows open for ventilation of both living and sleeping quarters, particularly in the latter. Overheating is a prevalent evil that should be advised against. For ordinary rooms an average temperature of 68 degrees F. is, from the standpoint of health, preferable to a higher temperature, except where there are aged people who require slightly higher temperatures. For sleeping rooms a much lower temperature will suffice, except in cases of illness. Under ordinary conditions it is far better to have the bedrooms cool and with the windows open than with high temperature and the windows closed.

We suggest that the matter of ample space and window provisions for living and sleeping quarters be left with the Section on Housing of the Committee on Labor, and that the above advice regarding the hygienic requirements pertaining to temperatures and opening of windows for ventilation of living and sleeping rooms be incorporated in the propaganda on the general hygienic requirements issued by the Committee on Sanitation.

Greek Meets Greek.

"What's coming off out in front there?" asked the proprietor of the Tote Fair store in Tumlinville, Ark.

"A couple of fellers from Straddle Ridge swapped mules," replied the clerk, "and now each is accusing the other of skinning him."

"Well, then, why don't they trade back."

"I reckon they are both afraid of getting skinned again."—"Kansas City Star."

The Professor's Trouble.

The professor was walking down the street when accidentally he allowed one foot to drop in the dry gutter. Thinking deeply on some obscure subject, he unconsciously continued walking with one foot on the sidewalk and the other in the gutter. A friend seeing him stopped and said:

"Good morning, professor! How are you feeling this morning?"

"Well," said the professor, "when I left home this morning I was feeling quite all right, but during the last few minutes I notice I have a limp in my left leg."—"The American Marine Engineer."

QUESTIONS & ANSWERS

HOW TO PREVENT COLD WATER FROM BACKING UP CIRCULATION PIPE AT RANGE BOILER.

Editor "Domestic Engineering": Figure 1 is a rough sketch of a range boiler job, that is causing us trouble, and we would like to ask you to help us to fix it up. The

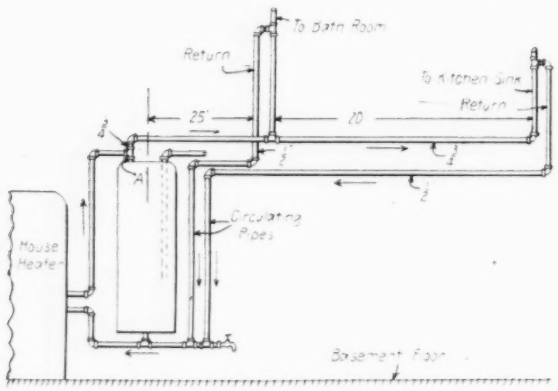


Fig. 1.

trouble is that when we open the faucet in the sink, it acts as if we were getting water through the circulating pipe, as that pipe cools off right away. The water gets hot in the boiler, but we get only a small amount of hot water at the faucet. The range boiler gets hot all the way down. We put on two check valves down near the draw off cock, but the water would not circulate, although we could get all the hot water that was needed after drawing out the cold water in the hot supply pipe.

Kindly explain how we can make this job work right.

Illinois. C. K. C.

The cold water at the bottom of the boiler backs up return lines on circulation system, when hot faucet is opened, if no check is on return line. The boiler water flows both ways to the hot water faucet. Hot water flows from top of boiler and cold water from bottom of boiler. These two currents mix before they reach the faucet, which consequently delivers luke-warm water instead of hot water. A check valve will remedy this.

The reason why circulation stopped entirely, when check valve was installed is, we believe, because the force which produces circulation is too small to lift the check, or in other words, the check was too heavy for the circuit.

Fig. 2 shows how a correct remedy may be accomplished without much cost. A swing check is attached to return pipe near bottom of range boiler; but instead of placing it level, it is placed on an angle of 45 degrees, with check hanging down plumb. In this position the check hangs off its seat a little and is always open to allow a natural circulation without any resistance to the flow.

But if ordinary heavy cast brass flapper, which comes with the check, is allowed to remain in it, the check will click, and perhaps pound when a hot water faucet is opened. This is due to the back pressure suddenly driving the flapper to its seat when a hot faucet is opened.

To prevent this noise, it is advisable to remove cast brass flapper and replace it with a flapper made of 10 or 12 ounce sheet copper, or aluminum. And it is best to fit the sheet metal flapper so that its point bears on the valve seat while part at hinge is about $\frac{1}{8}$ inch clear. This helps cushion the blow and prevent the noise.

Just to be on the safe side, correspondent should also remove the $\frac{3}{4}$-inch nipple at A and replace it with a 1-inch nipple, if he does not already have a 1-inch nipple there.

This should help to prevent cold water from backing

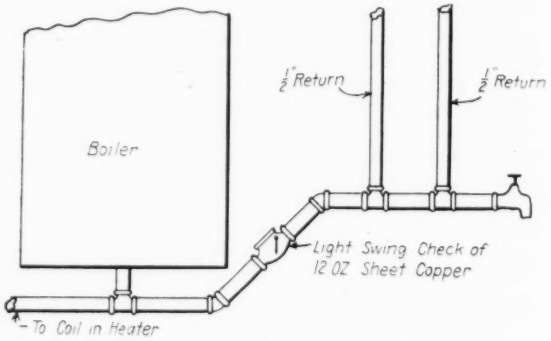


Fig. 2.

up through coil in heater and mixing with hot flow from top of range boiler.

If these things are done, there should be no more trouble providing the circulating pipes, both flow and return, all pitch up the right way, that is toward the fixtures.

REMEDY FOR WASHING AWAY OF WATER MAIN CROSSING A RIVER.

Editor "Domestic Enginering":—I am superintendent of the water works in a small town of about 2,000 inhabitants. The town is equally divided by a river. Our pumping station and reservoir is on the south side. We had a water main running across the river, which stayed in for about twelve years, but in the last three years we have a concrete bridge running across the river, about 10 feet below the water main, and since that time the concrete piers have created such a suction of water that whenever the river rises, it takes our pipe line out. On January 2nd it washed out again. Now, at the present, the only means of supply we have on the north side is a 2-inch by-pass line, running across the bridge on the sidewalk. Of course, we have to cut off this and drain every night to prevent freezing. It is just 500 feet across this bridge.

What would you advise as the most practical method to secure water on the north side?

(1) Put the pipe back in the bottom of the river; or
(2) Run it across the bridge and box it;
(3) And what would be your idea as to the best way of keeping this pipe from freezing?

A 4-inch pipe line will be ample size for us at present, as we have 96 pounds pressure to the square inch.

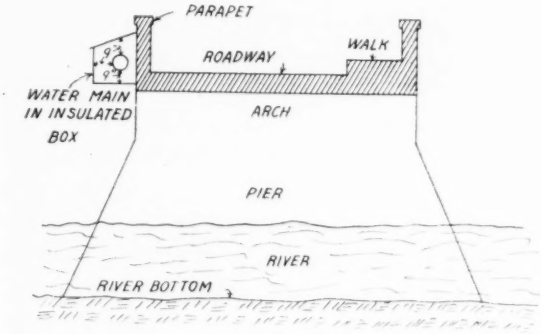


Fig. 1.

I would be very glad to have any advice from you that you think would be of any value to me.

West Virginia. K. W. C.

It is a little difficult to advise you definitely the best thing to do, without seeing the situation. Of course, you have explained it very clearly and very completely, yet, you know, there is nothing like a personal inspection of such a case.

We know of places where water mains run over bridges in cold climates without protection against frost, but the flow is so steady day and night that they do not freeze. These bridges, however, are shorter than yours and the pipes are much larger, 10 inches and up.

If the customers supplied by the main on the bridge are principally private residences, we are sure that a 4-inch main will freeze during cold weather, say, near zero, even if a moderate flow is maintained through the night.

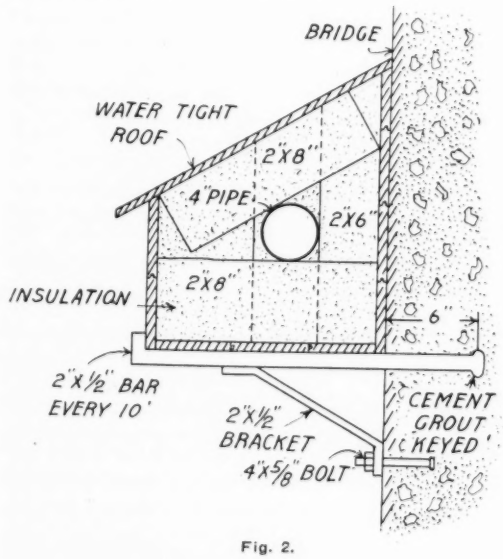


Fig. 2.

To protect it properly means boxing the main and packing sawdust or other insulation to a depth of 6 or 9 inches uniformly all around it. There probably is no room on top of bridge for such a boxing, which would have to be about 2 feet square over all.

It may be possible, however, to hang it along outside the face of bridge, something like Fig. 1, which is a cross section through bridge showing the water main resting on outlooks or cantilevers set into the concrete parapet.

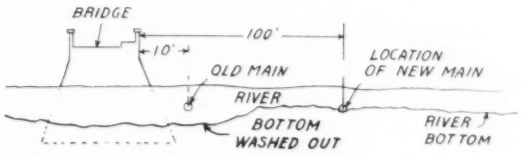


Fig. 3.

There is a packing of, say, 6 inches of sawdust between pipe and parapet and 9 inches below, outside of and over the pipe. The box may be tongued and grooved boards 8 or 10 inches wide and 1½ inches thick. These boards may be nailed to frames of 2x9 or 2x8 joisting at bottom, front and top, the back member of frame being 2x6-inch stuff.

Fig. 2 is a detail showing how these frames may be applied. It may be modified, however, to suit the case. We hardly think you will be justified in running the pipe in a box above water, however, unless the river bottom is not adapted to receive and hold the line.

Evidently the old line is too close to the bridge. We therefore advise you to sound the river higher up, say 100 feet or more from bridge. If the bottom is all right there, then we advise you to relay the line under water at that place, dredging a trench bed if possible so that the line will lie flat and solid.

We do not think the increased velocity due to "suction" between piers will affect the bottom much beyond 100 feet. You can easily find this out by sounding the bottom and making a chart of its profile. We advise you to look into the latter plan as we believe you will ultimately decide upon relaying the line under the water, but further away from the bridge.

Fig. 3 shows graphically how the old main, being so near bridge, probably was undermined and washed away. It also shows how the new main, if laid beyond the influence of the bridge suction, should stay where put.

ANSWERS TO INCOME TAX PROBLEMS.

Question:—The profits of my business for 1918 amounted to about $10,000. How much income tax will I be required to pay on this amount?

Answer:—If you are a married man, you are allowed an exemption of $2,000, together with an additional $200 for each child under 18 years of age. On the first $4,000 after that you are taxed at the rate of 6 per cent, and on the rest at the rate of 12 per cent. In addition to this normal tax, there is a graduated surtax which applies to all incomes of over $5,000. This surtax is one per cent on the income between $5,000 and $6,000, 2 per cent on the income between $6,000 and $8,000, 3 per cent on the income between $8,000 and $10,000, etc. Assuming that you are a married man with two children under eighteen years, your tax would be calculated in the following manner:

Income		$10,000
Exemption allowed		2,400
Amount subject to normal tax		$ 7,600
Tax on $4,000 at 6 per cent	$240	
Tax on $3,600 at 12 per cent	432	
Total normal tax		$ 672

Surtax $5,000 to $ 6,000 at 1 per cent	$ 10	
" 6,000 to 8,000 at 2 per cent	40	
" 8,000 to 10,000 at 3 per cent	60	
Total surtax		$ 110
Total tax		$ 782

* * *

Question:—I am one of three partners, and the profits of our business amounted to approximately $15,000 for the year 1918. Each one of the partners draws a salary of $3,000, but none of the profits of the business were drawn out by the partners. Will the partnership be liable for tax on this profit?

Answer:—Your partnership business as such is not liable to taxation upon its income, but each individual partner is liable for the tax on his share of the profits of the business. If each of the partners owns a one-third interest in the business, then each partner will be required to pay income tax on one-third of the profits earned, viz., $5,000, and also on the $3,000 received as salary. In this case each partner would have to report an income of $8,000, being the two amounts added together, less the exemptions allowed to married and unmarried persons, as the case may be. The method of computing the tax for each individual partner will be the same as illustrated in the above answer.

* * *

Question:—My wife receives an independent income. May she render the return for her income separately, or must her income be included with mine on the report I render?

Answer:—If the husband and wife each receive an independent income equal to or in excess of $1,000, separate returns may be rendered. If, however, the income of either is less than $1,000, but their combined income equals or exceeds $2,000, a joint return should be rendered.

* * *

Question:—We conduct a retail business and would like to know the shortest method of finding the cost of goods sold during the year.

Answer:—If you are buying and selling merchandise you must find your profits for the year on the following basis: First, ascertain the gross sales or the total cash receipts for the year. Then add together the inventory at the beginning of the year and the total amount of goods purchased during the year. From this sum subtract the inventory at the end of the year, and the result is the cost of goods sold. The cost of goods sold may then be deducted from the gross sales, and the difference is the gross profit. From the gross profit may then be deducted the expenses of doing business, and the result is the net profit for the year. The following illustration will show how this is done:

Total amount of sales for year 1918		$100,000
Inventory, Jan. 1, 1918	$10,000	
Goods purchased during 1918	75,000	
	85,000	
Inventory, December 31, 1918	11,000	
Cost of goods sold		74,000
Gross profit		$ 26,000
Cost of doing business (itemize these expenses)		17,000
Net profit		$ 9,000

* * *

Question:—May we claim depreciation on our stock of goods as a deduction from gross profit?

Answer:—Depreciation on goods held for sale is not allowed as a deduction, but the retailer may claim depreciation on property used for the business, fixtures and delivery equipment. Depreciation on your stock of goods would probably be taken care of in your annual inventory, as you would not inventory the value of an article at twenty dollars if it were worth only ten dollars, even though it had cost you more than ten dollars.

Question:—Our corporation carries life insurance policies on the lives of a number of the members of the organization. Is the premium paid on these policies deductible from the gross income as an item of expense? One of these policies matured during 1918 and the corporation received the face value. Must the amount thus received be reported as taxable income?

Answer:—Premiums paid by corporations for insurance, covering the lives of those interested in the business, cannot be deducted from the gross income. The premium on such policies is in the nature of an investment rather than an expense, as the amount of premium will eventually be returned to the corporation, either through the death of the insured, or when the policy matures.

To determine the amount of taxable income to be reported for the matured policy, find the total amount of premiums paid on this policy. Subtract this from the amount received at maturity, and the difference is the amount of taxable income to be reported from this source.

ANNUAL CONVENTION OF THE MASTER STEAM AND HOT WATER FITTERS ASSOCIATION OF WISCONSIN.

Changes Name to Conform with the National Association.

The Master Steam and Hot Water Fitters' Association of Wisconsin held its annual convention at the Builders' Club in Milwaukee on January 13th. About one hundred delegates were in attendance and the convention was very successful.

The many important matters coming before the convention were taken up and disposed of rapidly. Reports of the officers and committees were heard; recommendations made and adopted and discussions of general interest were held.

The name of the association was changed, to wit: Heating and Piping Contractors' Wisconsin Association, to conform with that of the National Association.

The convention closed with a banquet at the Milwaukee Athletic Club with interesting talks by prominent speakers.

The work and services for the past year of the officers and directors of the state association were approved and appreciation shown them by a re-election for the ensuing year. The officers, as elected, are:

President, Frank H. Meadows, Milwaukee.
Vice-President, James Sullivan, Stevens Point.
Secretary and Treasurer, Fred Kaufman, Milwaukee.
Recording Secretary, Joseph H. Volk, Milwaukee.

The members of the Board of Directors, as elected, are: Edmund Grassler, Milwaukee; Fred Kaufman, Milwaukee; F. H. Meadows, Milwaukee; J. B. Sullivan, Stevens Point; E. J. Sullivan, Kenosha; F. E. Grebbe, Waupun; Wm. J. Bresnahan, Fond du Lac, and Frank Muller, Milwaukee.

How Tommy Atkins Got a Seat.

A tired "Tommy," loaded with equipment, climbed into a crowded London bus. No one offered him a seat. Finally he took from his haversack a small bomb.

"This is one of the things we use out there, you know," he remarked to two or three passengers. "See this pin here? When I pull it out like this it should explode 60 seconds later. If I put it back again the thing is harmless." Then, beginning to search frantically: "Where on earth did I put that pin?"

Within one minute the bus was empty. "Tommy" watched the passengers leave. Then, putting the bomb back in his haversack, he stretched himself full length on the cushioned seat.—"The American Marine Engineer."

LEGAL QUESTIONNAIRE

*Will Unintentional Misrepresentation of Fact in Sale of Heater Give the Buyer Right to Overturn the Transaction? This Question is Answered in the Most Careful Manner**

By **"The Judge"**

Unintentional Misrepresentation of Fact in Sale of Heater May Give Buyer Right to Overturn the Transaction.

Editor "Domestic Engineering":—Included in some alteration work which I did recently for an owner, was the installation of a gas hot water heater for the kitchen. The fixture was a second-hand fixture which I had picked up when replacing on another job. When I sold this heater for the alteration job, I told the owner that it was about two years old, and it certainly did not look over that age and was in good condition. I based my statement upon the fact that the house from which I had taken it had been built about two years. I later discovered, when the controversy arose, that the heater was second-hand when installed in the other house, and was in reality about five years old. The owner, in the present job, has disputed several items of my bill, but bases the largest part of his claim for a deduction upon the fact that the heater was misrepresented to him, as to the length of its previous use. I am not worrying about the balance of the dispute, but would like to know whether my statement as to the age of the heater places me at a disadvantage as to that item of disagreement. As far as I can see, the heater is as good as any which have only been used for two years. R. G. D.

Answer:—A man may go a long way in making statements about the goods which he is endeavoring to sell, without overstepping the boundary beyond which he cannot legally go in an attempt to sell his merchandise. Probably no branch of the law is older than that which deals with barter and trade, for man's first intercourse with man undoubtedly took that form which underlies all business dealings. Consequently there has gradually developed a rule which makes wide allowances for what is called "dealer's talk." This simply means that it is recognized that the seller of an article, eager to complete a sale, makes commendatory expressions and extravagant statements, such as men usually use to puff their wares and induce others to enter into bargains, and that such, within certain limitations, are not to be deemed representations of facts.

For instance, the seller of a horse may enlarge upon his beauty, his great speed and other things, which he thinks will induce the buyer to purchase and which are, after all, only extravagant expressions of opinion. But if the seller states that upon a certain date, at a certain place, the horse under discussion was timed officially in 2:10 for a mile, on a muddy day, that is a misrepresentation of fact which would give the buyer a right to rescind the contract if it were not true.

It is sometimes hard for the average man to make a very clear distinction between so-called "dealer's talk" and fraud or misrepresentation, and there are other cases, of course, which are so close to the line that even a court of last resort may divide upon the question whether the statement made was such as to avoid the sale.

Fraud, in such cases, does not always have the meaning which a layman would attach to it. In the eyes of the law, fraud is not always accompanied by a criminal or actual intent to deceive. It consists of a false representation of fact, made with a knowledge of its falsity, or made *recklessly*, without belief in its truth, with the intention that it shall be acted upon by the complaining party, and actually inducing him to act upon it to his injury. That is, a seller may make a statement, without actual knowledge whether it is true or not, thinking perhaps that it has no particular weight with the buyer in making his decision, and yet in the eyes of the law such a situation may be fraud by the seller.

As a general rule, an innocent misrepresentation of fact has no effect upon a sale or a contract to sell, unless the representation is a condition in the contract or amounts to a warranty. Actual fraud renders a sale or a contract to sell voidable, and, if proved, gives the buyer a right to rescind the transaction or sue for damages in an action for deceit. Generally, again, such a fraudulent representation must be of fact, as distinguished from opinion, intention or a matter of law. The mere failure of a party to disclose facts, which he has knowledge of, does not constitute fraud unless his silence is a part of an active attempt to deceive the other party to the transaction. If a man makes a statement of fact, without knowledge of its falsity, as a general rule, it is not held to be fraudulent. But he has no right to make a statement when he does not know whether it is true or false, and which he makes recklessly. In addition, it is held that where a man makes a statement of a material fact, unqualifiedly, he has made it of his own knowledge, and if it be untrue it is fraudulent. It is the law that a false representation made to a third party is not fraudulent as far as the particular transaction goes, but if the representation is made with the intention that it shall be communicated to the buyer, and it is actually communicated, the effect is the same as if it had been made directly to the buyer. A person may be bound by the false representations of his agent, or of one to whom he refers the other party for information.

Not all representations of fact will avoid a sale or a contract of sale, even though fraudulent in the eyes of the law. To avoid a sale, the representation must be material, that is, it must have been an inducement for the other party to the contract. Perhaps a clearer way to put it, and which holds good in most cases, is that a representation is material, if the

*Every Effort is made to the End that these Answers may be authoritative. However, we cannot assume any Responsibility because of the very Nature of the Service, which is rendered without a personal interview.—Editor.

other party would not have entered into the contract, had he known it to be false.

In addition to the above rules, it is necessary that the party, to whom the misrepresentation has been made, actually relied upon the truth of the false statement. If he did not believe, he was not deceived. A buyer may know that a statement made is false and yet go ahead and buy. In such a case it is evident that he did not make his purchase on the strength of the false statement, but to the contrary, in spite of it. In such a case he has no right to avoid the sale on that ground. In your case, if it should develop that the buyer of the second hand heater knew all about its age, he would have no right to complain at this time.

To give a party the right to avoid a sale because of false statements made, it is necessary to show that he had a right to rely upon the false statement complained of. Where the means of knowledge are at hand and are equally available to both parties, a question arises upon which the various courts of the country are divided, some holding that the buyer may rely upon the statements of the seller, and others holding that he has no cause to complain, since he could have found out the facts himself without more trouble than the seller took, or should have taken.

Under the rule that a complaining party must have been injured in order to have the right to avoid the sale, it has been held that a buyer cannot rescind a sale where the goods, which he bought were worth what he paid for them. This rule is not universal however.

Do not forget, in a discussion on this subject, that there is a rule of law, almost as old as history, that is called *caveat emptor*. Put into English this means: "Let the buyer beware." The law says that a business man cannot conduct his business on the principle that he shall receive the protection which might be accorded a babe in arms. To a certain extent he must rely upon what he can find out, or should find out for himself, about his business transactions. In fact, unless fraud is shown, the business man must rely upon his own judgment and investigation in making purchases, in the absence of warranties, etc. To protect himself, a buyer may require a warranty from the seller in any matter the risk of which he is not willing to assume. Any device used by a seller to conceal defects or knowledge from the buyer or to induce him to omit inquiry or examination is as much fraud as active concealment.

The doctrine of *caveat emptor* is carried so far by some courts that they hold that the seller is under no obligation to communicate the existence of defects in the thing sold not discoverable upon examination, such as a hidden disease in a horse. But it is generally held in the United States that the *intentional non-disclosure* of a hidden (and is called a latent) defect by the seller, when he knows that it is unknown to the buyer, is fraudulent. Mere refusal to give a warranty does not relieve the seller from the necessity of disclosing the hidden defect.

A seller may express a mere matter of opinion and not be held liable for it, although he knew that it was unfounded or false. Such is not fraud in the eyes of the law, because the buyer, if he relies upon the mere opinion of the seller, has no right to object, for he had the right to have an opinion of his own and act upon it.

A seller's claims or statements as to the value of the thing sold are generally looked upon as expressions of opinion only, and not as representations of fact, and this rule applies to statements as to market value. But the rule is otherwise, if the relation between the parties is confidential, or if the seller has special learning or means of knowledge not open to the buyer. While a seller may not be held liable for an expression as to the general market value of the thing sold, he will be held liable for misrepresenting material facts upon which that value is based. For instance, a man may say that his business, as a going concern, is worth such and such a price, but he has no right to misstate the amount of earnings, profits, indebtedness or good will of the business. Some courts hold that statements by a seller of the price, which he has been offered by others, is a misrepresentation of a material fact, if untrue, and other courts say that it is not such a material fact as to permit the buyer to avoid the sale.

Misrepresentation by the seller, amounting to fraud, concerning the quality, character or soundness of the goods, is ground for avoiding the contract or sale, provided the circumstances are such that the buyer was entitled to rely upon the statements made. If the buyer relies upon an examination or test made by himself or another, he is held not to have relied upon the statements made by the seller and cannot wiggle out of the sale on the ground.

A party alleging fraud by a seller, has the burden of proving not only that false representations have been made, but in addition, that the seller knew of the falsity of the statements made, or should have known, and that he, the buyer, relied upon the false statements, and was damaged thereby. The jury decides whether the false statements were made, whether they were matters of opinion or of fact, and whether they were false or not; but it is for the court to rule, as a matter of law, whether the false statements were material statements, or statements which did not induce the buyer to go through with the sale.

From the above statements of the law, you will see that your own case will depend somewhat upon the surrounding facts, as to your liability in the transaction. Of course, the owner will undoubtedly say that he would not have bought the heater at your price, if he had known its real age. On the other hand you may be able to show that your statement, made off hand, really had no bearing on the owner's ultimate decision, that he examined the heater carefully, was very much pleased with its condition, has had no trouble whatever with its operation, and is merely raising the point, which he has, for the purpose of avoiding payment on the whole work which you did for him. However, if he can show that the life of such a heater is limited to a certain number of years, and that the three years difference between the real age of the heater, which he bought, and the two years which you told him, materially affect its value, he might succeed in his contention.

If your situation involves more than the mere dispute over the difference in value between a heater two years old and one five years old, I should say that your chances of succeeding in the dispute over the heater were good enough to make an issue of it.

In No Danger.

"I say, Jones, I want to insure my coal yards against fire. What would a policy for $20,000 cost?"

"What coal is it? Same kind as you sent me last?"

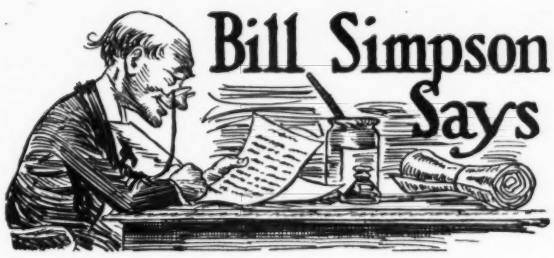
"Yes."

"I wouldn't bother insuring it if I were you. It won't burn."—"Boston Transcript."

A Sly Dog.

"Before we were married," she complained, "you always engaged a cab when you took me anywhere. Now you think the street car is good enough for me."

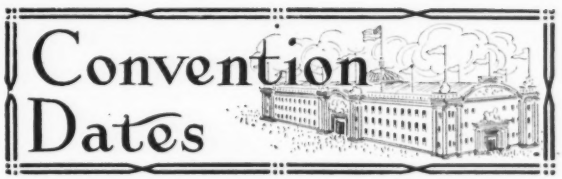
"No, my darling, I don't think the street car is good enough for you; it's because I'm so proud of you. In a cab you would be seen by nobody, while I can show you off to so many people by taking you in a street car."—"Tit-Bits."



(With Apologies to K. C. B.)

Not long ago I
* * *
Started out to buy
* * *
A phonograph of some kind.
* * *
About the third place
* * *
I went to "shop" I met
* * *
A little girl saleslady,
* * *
Who knew more about
* * *
Phonographs than Mr. Edison—
* * *
I'll bet a dollar she did.
* * *
She explained all about
* * *
Overtones, telling me
* * *
That those are the things
* * *
That make music.
* * *
The primary tone of music
* * *
Is only ordinary noise,
* * *
But these fine little
* * *
Overtones—like small waves—
* * *
Are what make music pleasing.
* * *
Now some phonographs record
* * *
And reproduce from 50 to 80
* * *
Per cent more overtones than
* * *
Other machines. That's the
* * *
Reason there is a difference
* * *
In quality and price.
* * *
It's the Overtones
* * *
That a fellow puts into
* * *
His work, whether he is
* * *
A plumbing contractor
* * *
Or just a bookkeeper
* * *
That builds up his reputation
* * *
As a good workman.
* * *
Whatever you do—
* * *
If it's worth doing at all—
* * *
Put in a liberal supply
* * *
Of Overtones.

Remember the Red Cross Fund.



February 11, 12 and 13, 1919.—The annual convention of the Ohio Master Plumbers' Association, at Youngstown, Ohio, with headquarters at the Ohio Hotel.

February 12, 1919.—The winter meeting of the Eastern Supply Association, at the Hotel Astor, New York City.

February 19, 1919.—The regular winter meeting of the Central Supply Association, at the Congress Hotel, Chicago.

February 20, 1919.—Special meeting of the Trade Extension Committee, at the Congress Hotel, Chicago.

February 20, 21 and 22, 1919.—The twenty-second annual convention of the Montana Master Plumbers' Association at Great Falls, Mont.

March 10, 11 and 12, 1919.—The annual convention of the Indiana Society of Sanitary Engineers, at Terre Haute, Ind.

March 10 and 11, 1919.—The annual convention of the Missouri State Association of Master Plumbers, at Hannibal, Mo., with headquarters at the Mark Twain Hotel.

March 11-12, 1919.—The annual convention of the New York State Master Plumbers' Association, at Buffalo, N. Y.

March 18, 19 and 20, 1919.—The annual convention of the Michigan State Association of Master Plumbers, at Lansing, Mich.

May 5, 6 and 7, 1919.—The annual convention of the Texas Master Plumbers' Association, at San Antonio, Texas.

Michigan Master Plumbers to Meet at Lansing.

The Michigan State Association of Master Plumbers will hold its annual meeting in Lansing, Mich., on Tuesday, Wednesday and Thursday, March 18th, 19th and 20th, according to the official call, which has just been issued by President Theodore C. Gross, of Lansing, Mich. This convention will be an open meeting, according to his announcement, and all master plumbers in the state are invited to attend.

Vallejo, Cal.—W. J. England has opened a plumbing establishment in this city.

Chicago, Ill.—The Chicago Plumbing & Heating Co. has been incorporated with a capital of $5,000. The incorporators are: Edward E. Shinnick, William Capeus and Rose Hoar.

Brooklyn, N. Y.—The Sheppard-Kellett Co. has just been incorporated with a capital of $5,000, to conduct a plumbing and heating business. The incorporators are: J. O. Ellery, J. E. Riley and W. Hyer, all of 1914 Sixty-first Street.

Tippecanoe City, O.—McClure & Schultz Bros. is the style of a new plumbing and heating firm, which has just started in business in this town. The members of the new firm are: J. W. McClure and his son, Clyde McClure, A. W. Schultz and Herman Schultz.

Obituary

Professor Rolla C. Carpenter.

Rolla C. Carpenter, professor of experimental engineering at Cornell University, died at his home in Ithaca, N. Y., on Sunday, January 19th, in his sixty-ninth year. Professor Carpenter was born in Orion, Mich., in 1850, and he was for many years connected with the engineering department of the University of Michigan at Ann Arbor until 1895, when he became professor of experimental engineering at Cornell University, a position he held until his death. Professor Carpenter early gave his attention to heating and ventilating engineering, the result of his studies along this line being his work on "The Heating and Ventilating of Buildings," which is known wherever heating and ventilation are studied. He was one of the charter members of the American Society of Heating and Ventilating Engineers, and served as its president in 1896. He supervised the installation of a high-pressure fire protection system in Baltimore in 1911 and a high-pressure pumping system in New York in 1912. He served as judge of machinery and transportation at the Chicago World's Fair in 1893, at the Buffalo Exposition in 1901, and at the Jamestown Exposition in 1907. His wife and three children survive him.

James J. Wade.

James J. Wade, one of the best known old-time master plumbers in Chicago, died at his home in this city on Sunday morning, January 26th, of heart disease. James J. Wade was born in Waterford, Ireland, in 1843. He came to this country with his parents at an early age, and learned the plumbing trade in Hartford, Conn., in the establishment of Birch & Bradley, who were without rivals as mechanics. Having acquired a thorough practical knowledge of the craft, Mr. Wade began the career of a journeyman, working at his trade in various cities of the United States and Canada. In 1863 he settled in Chicago, and opened a plumbing business at 142 Dearborn Street, in partnership with James Ferguson, the firm being Wade & Ferguson. Later he bought his partner's interest and continued the plumbing business on his own account, until he admitted two of his sons, Thomas P. and James J., Jr., when the name of the firm became J. J. Wade & Sons Co.

The Late James J. Wade.

Mr. Wade's mechanical and inventive genius also lead him into the manufacture of plumbing specialties, this branch of his business interests being known by the name of the Wade Iron Sanitary Mfg. Co., also located in Chicago.

Mr. Wade always took a prominent part in the work of advancing and elevating the plumbing fraternity, especially during the eighties and nineties of the last century and during the first years of this century. He was a firm believer in the necessity of having educated boys learn the plumbing trade, and he was one of the first to deplore the indiscriminate criticism of the daily papers upon the plumber, as it had a tendency to keep intelligent young men from learning the trade. He took a prominent part in the organization of master plumbers' associations in this country. In 1883 he was elected as one of the delegates chosen to represent the Chicago Master Plumbers' Association at the national convention held in New York City, at which the National Association of Master Plumbers was organized. At that meeting he became prominent as the author of a paper read by him on the "Master Plumber's Trade." In 1884 he was again a delegate to the annual convention of the National Association held at Baltimore, and he was the author of the Baltimore Resolutions, adopted at this meeting. At this convention he was also honored by election to the office of secretary of the National Association. Among the many other honors in the trade which came to Mr. Wade was also this that he served as president of the Chicago Master Plumbers' Association in 1898. His funeral was held last Tuesday from St. Anne's Church, Fifty-fifth Street and Wentworth Avenue, and the interment took place at Calvary. A large delegation from the Chicago Master Plumbers' Association attended the burial. His wife, two daughters and four sons survive him.

Ernest Dickinson.

Ernest Dickinson, of the plumbing firm of Weed & Dickinson, at Calexico, Cal., died at his home in that city last week.

Robert King.

Robert King, a plumbing inspector in Portland, Ore., died at the Portland Sanitarium on Tuesday morning, January 14th, after five months' illness. He had been connected with the plumbing inspector's office in Portland since 1906.

James L. McCaffrey.

James L. McCaffrey, treasurer of the McCaffrey Heating Co., of Pawtucket, R. I., died at his home in that city on Monday, January 20th, of pneumonia. Mr. McCaffrey was only 24 years old. After his graduation from high school, he entered the heating business with his father, James F. McCaffrey. He was unmarried.

John F. Renn.

John F. Renn, a plumbing inspector in Chicago for more than twenty years, died at the Alexian Brothers' Hospital in this city on Wednesday evening, January 22nd, after four days' illness of pneumonia. His wife died on the morning of the same day, also of pneumonia. He died without knowing of his wife's death. A daughter survives them.

Legal Decision Following Contractor's Death.

A decedent in his life time held a contract for the erection of a building, actual construction of which had been in progress about a month, when he died. The widow, who was the executrix of the estate, executed notes to a bank, signed by her as executrix, and applied the proceeds toward payment for labor and material which had been used in the construction of the building. She afterwards abandoned the enterprise and the building was completed by the surety of the decedent. Held, that the notes were not a valid claim against the estate.—Exchange Nat. Bank v. Betts' Estate, Supreme Court of Kansas; 176 Pacific, 660.

Late News from Utah.

The county commissioners have under consideration a proposal for the erection in the immediate future of a joint city and county building at Ogden.

In a million dollar bond election to be voted upon shortly at Salt Lake City, the sum of $100,000 is included for sanitary and storm sewers.

Among the Wholesalers and Manufacturers

TRADE EXTENSION COMMITTEE TO MEET IN CHICAGO.

L. McNamara, of St. Louis, Mo., president of the National Association of Master Plumbers and chairman of the Trade Extension Committee, has just announced that a special meeting of the Trade Extension Committee will be held at the Congress Hotel, Chicago, on Thursday, February 20, 1919, the day following the winter meeting of the Central Supply Association. In the opinion of Mr. McNamara, the present time seems opportune for reinaugurating the work of this committee. The ground work was so thoroughly laid last season, but unfortunately, the execution had to be stopped, owing to federal restrictions.

In referring to this movement, Paul Blatchford, secretary of the Central Supply Association, said this week: "We feel no one element will be a greater factor in facilitating the readjustment of business than carrying out the practical working plan of the Trade Extension Committee. Already these ideas have been presented to the members of the Central Supply Association, and of the Eastern Supply Association, with particular emphasis laid on a sales campaign between the representatives of the supply houses and their customers, the plumbing and heating contractors."

In commenting on the plumbing supply salesman's part in this work, a recent bulletin of the Central Supply Association said: "The salesman, who is merely an order taker, fulfills only a small part of his mission, but the salesman who will co-operate with his trade in developing business is an asset to the house he represents and a positive help to his customer. Practical salesmanship can find no better outlet for its energy right now, when business is quiet, and time permits, than to work along these lines. Every jobber should place and constantly keep before his salesmen, both local and road, these ideas, and if followed out, will prove a surprise in the results which are bound to follow. A very large number of plumbers have been using for several months the 'Premise Report Cards,' and these can be made a basis for development work."

M. L. KLINE BUYS LARGE WAREHOUSE.

M. L. Kline, jobber of plumbing and heating supplies in Portland, Ore., has just purchased the four-story building opposite his main store building, at 87-89 Front Street, in that city. The building in question has been occupied by Mr. Kline's business as a warehouse for sometime, and he found it so convenient that he decided to purchase it.

THOS. MADDOCK'S SONS CO. RE-OPENS NEW YORK OFFICE.

Thomas Maddock's Sons Co., of Trenton, N. J., has reopened its New York office, which was closed last year, when Lee A. Kelly, its manager, entered the Government's service. Mr. Kelly is again in active charge of the company's sales department in the Metropolitan district and is located in the Architects' Building, 101 Park Avenue. He has some interesting tales about camp life as a sergeant major. In commenting on the business situation, Mr. Kelly said he is looking forward to an active building program for 1919, but believes it will be specially crowded in the last six or eight months of the year.

THE PROPOSED BOSTON CHAPTER OF THE A. S. H. AND V. E.

The proposed new Boston Chapter of the American Society of Heating and Ventilating Engineers is likely to start off with a good-sized membership list. A committee, appointed at the preliminary meeting recently, headed by A. S. Kellogg, of Boston, has been conducting a campaign to interest engineers and others and will have many applications for membership to present when the first formal meeting is held. This meeting has been put off for a time because of the illness of several of the leaders in the organization plans.

THE ANNUAL MEETING OF HAWKEYE SUPPLY CO.'S SALESMEN.

The annual meeting of the sales department of the Hawkeye Supply Co., of Mason City, Ia., was held in that city on Thursday, Friday and Saturday, January 16th, 17th and 18th. Sessions were held Thursday and Friday afternoons and Saturday morning at the company's offices, and on Thursday and Friday evenings in the Chamber of Commerce rooms. Enthusiasm over business prospects for this year was expressed, not only by those connected with the company, but also by representatives of the various manufacturers and jobbers, who were present. Interesting and instructive addresses were made by manufacturers' representatives and by members of the Supply company. A banquet was given by the Hawkeye company on Thursday evening at the Cerro Gordo Hotel. The manufacturers' representatives present were: Martin Weil and H. O. Walker, of Weil Bros., Chicago; A. S. Lindeblad, of Hoffman Specialty Co., Chicago; F. A. Lathrop, of Chicago, district sales manager of the Youngstown Sheet & Tube Co., Youngstown, O.; George A. Lutz, of Charles A. Miller Co., Sturgis, Mich.; E. C. Richards, of Red Jacket Mfg. Co., Davenport, Ia.; F. H. Brune, of Rensselaer Valve Co., Troy, N. Y.; A. G. Pickett, F. Sommers and J. Prillaman, of H. W. Johns-Manville Co., Chicago; H. A. Stamper, of Vaile-Kimes Co., Dayton, O.; Jos. Worscheck, of Kohler Co., Kohler, Wis.; E. S. Stebbins, of Glauber Brass Mfg. Co., Cleveland, O., and C. J. Hanson, of Kokomo Sanitary Mfg. Co., Kokomo, Ind.

The active officers and department heads of the Hawkeye company, who were all present, are as follows: C. B. Sherman, president and manager; G. B. Pray, secretary and treasurer; R. C. Hunt, plumbing department; F. R. Bishop, heating department; R. P. Wakeman, mill supply depart-

ment; H. Dalziel, creamery supply department; G. W. Stricker, price and cost department; E. S. Gage, auditor, and G. F. Shelp, warehouse superintendent. The company's salesmen are: C. S. Brager, B. B. Daggett, F. B. Gonser, B. F. Staples, I. C. Turner and C. J. Million.

ALL INDUSTRIES TO AID GOVERNMENT IN DISTRIBUTION OF ITS SURPLUS SUPPLIES.

Plans for close co-operation between the Government and industry in the sale of surplus Government supplies are being worked out by the Director of Sales of the War Department and the War Service Executive Committee of American Industries.

The War Service Executive Committee, recently named by the new advisory council comprising the chairman of the country's nearly 400 War Service Committees, consists of the members of the Executive Committee of the Chamber of Commerce of the United States with the addition of others to make it more completely representative of all the groups of American industry. The members now are as follows:

Joseph H. Defrees, Chicago, chairman; E. A. Fidene, Boston; A. C. Bedford, New York; W. L. Clause, Pittsburgh; Lewis E. Pierson, New York; R. G. Rhett, Charleston, S. C.; Homer L. Ferguson, Newport News, Va.; Harry A. Black, Galveston, Texas; William Butterworth, Moline, Ill.; L. S. Gillette, Minneapolis, Minn.; E. T. Meredith, Des Moines, Iowa; Harry A. Wheeler, Chicago; James R. MacColl, Pawtucket, R. I.; Charles H. McDowell, Chicago; August H. Vogel, Milwaukee, Wis.; E. W. Rice, Jr., New York; C. S. Brantingham, Rockford, Ill.; Charles C. Ashbury, Philadelphia; William Ritter, Columbus, O., and James Bell, Minneapolis, Minn.

The policy of the Government with respect to the sale of supplies, as outlined by C. W. Hare, Director of Sales, will be to consult representatives of the industries concerned whenever sales are to be made in volume likely to affect trade conditions.

NEW YORK STATE COMMISSION ON RECONSTRUCTION.

Construction of Necessary Public Works to Be Speeded Up and Done in Order of Their Importance.

Housing, employment and labor problems are among those which Governor Smith of New York has committed to the newly appointed State Reconstruction Commission for study and solution.

In his message to the legislature on the work of the commission he said in reference to these problems:

"It is immediately necessary that the commission examine carefully the housing conditions of the state. There exists among various voluntary agencies a large volume of information on the subject of present conditions, and I have no doubt that these agencies and many others interested in the housing problem will be able to offer constructive recommendations that will give relief.

"I ask the commission to make every endeavor to secure the fullest information and after carefully studying it to recommend either legislative or executive action. The war made apparent how fundamental adequate housing is in relation to labor supply. I am particularly anxious that we find a solution of our housing difficulties that looks to the future and that a program may be initiated that will make for the permanent welfare of the state.

"Employment is an important subject for the attention of the commission. The state needs the services of every man and woman in the right place at the right time. Co-ordination of state resources with federal, municipal and private resources is most important. The commission should immediately be informed of any serious conditions of unemployment, and I request the public to bring to the commission any information on this subject. From such knowledge and information I will be able to advise the legislature of any action that may be necessary to meet any grave emergency.

"Should any great labor crisis arise, due to the period of readjustment, although I hope that the productivity of the state will not be interfered with in any such way, I ask the commission to find the best method of dealing effectively with such an emergency.

"I commit to the commission for their serious consideration the federal government proposal as embodied in what is known as the soldiers' settlement act.

"I also ask immediate consideration of the suggestion of the secretary of labor that necessary public works be speeded up to meet unemployment conditions, having in mind that they should be begun and finished in the order of their importance to the whole community."

The commission is made up of thirty-six members, five of whom are women, representing the various business interests of the state, including banking and real estate. Specialists in various fields have been appointed.

NEW CONSTRUCTION WORK.

Among the contracts being let for various types of construction during the past week, as reported by "The American Contractor," are the following:

Private Work.

$85,000 building No. 40, Brooklyn, N. Y., National Analine & Chemical Co.

$85,000 warehouse, Brooklyn, N. Y., Rockwood & Co.

$160,000 twenty superintendents' residences, Wilson, Pa., The Carnegie Steel Co.

Plans are being drawn for the following:

$100,000 society building, Haverhill, Mass., Young Men's Christian Association.

$175,000 Y. M. C. A. building, Naugatuck, Conn., Y. M. C. A.

$100,000 museum, Huntington, L. I., N. Y., Aug. Heckscher.

$400,000 apartment building, Duluth, Minn., Whitney Wall Co.

$400,000 apartment building, Chicago, Ill., Madison Park Apartment Co.

$100,000 church, Waterbury, Conn., Immaculate Conception Church.

$100,000 hotel, St. Joseph, Mo., D. E. Feldenstine.

$125,000 M. P. Theatre, Brooklyn, N. Y., Herman Weingarten.

$350,000 church, Grand Rapids, Mich., Fountain St. Baptist Church.

$1,000,000 hotel, Milwaukee, Wis., Oscar Brachman.

$100,000 apartment building, Chicago, Ill.

Municipal Work.

$350,000 six cottages and connecting corridors, Philadelphia, Pa., State Department of Health.

$99,085 shaft, New York City, Public Service Commission for the First District.

Municipal and State Work.

$125,000 Community Memorial building, South Orange, N. J., Township of South Orange.

$300,000 University, St. Louis, Mo., Washington University.

$150,000 City Park, Jersey City, N. J.

$400,000 plant and industry building, St. Paul, Minn., Board of Regents, U. of M.

$150,000 high and grade school, Duluth, Minn., Board of Education.

$100,000 school, Akron, H. V. Hotchkiss, superintendent, Central High School.

$1,250,000 library, Minneapolis, Minn., University of Minneapolis.

Plans are being drawn for the following:

$800,000 University buildings, Knoxville, Tenn., University of Tennessee.

$300,000 station development, New England Coast, United States Government.

$150,000 dormitory, Belchertown, Mass., Commonwealth of Massachusetts.

$190,000 coal pulverizing plant, Kansas City, Mo., City of Kansas City, Mo.

$200,000 garbage reduction plant, Syracuse, N. Y., Department of Public Works.

Sewers and Sewage Disposal Systems.

$200,000 sewers, St. Paul, Minn., City of St. Paul.

$500,000 sewage disposal plant, Syracuse, N. Y., City of Syracuse.

BIG TOTAL FOR 1918 FOREIGN TRADE.

Heavy December shipments brought the total exports for 1918 to $6,150,000,000, a decrease of only $83,000,000, from the 1917 total, according to an announcement by the Bureau of Foreign and Domestic Commerce, Department of Commerce. Imports for the year totaled $3,031,000,000, or not quite half the exports. Imports for the previous year were valued at $2,952,000,000.

Exports for December, the first full month after the signing of the armistice, reached a total of $566,000,000, a decided increase over the $522,000,000 recorded for November, although not up to the high mark of $600,000,000 for December, 1917.

Imports for December, however, were low, being $211,000,000, against $251,000,000 for November and $228,000,000 for December of the previous year.

Imports as well as exports of gold continued to decrease, the imports amounting to $62,000,000 in the calendar year 1918 against $552,000,000 in 1917 and the exports to $41,000,000 and $372,000,000 in the same year.

Imports of silver increased from $53,000,000 in the calendar year 1917 to $71,000,000 in 1918. The exports of silver during December, 1918, amounted to $48,000,000, a larger amount than in any month during the past three years. For the calendar year, exports of silver amounted to $253,000,000 in 1918 against $84,000,000 in 1917.

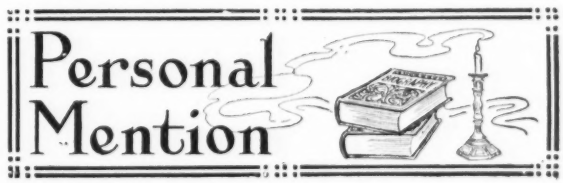
TRADE CALENDARS.

The Leighton Supply Co., of Fort Dodge, Iowa, has issued a most serviceable calendar for the new year, consisting of twelve sheets, each sheet containing, besides the current month, also the dates for the preceding and succeeding months, making it very handy for quick reference. Pictures of the company's plant and of leading generals in the world war adorn the calendar.

The Youngstown Sheet & Tube Co., of Youngstown, O., issued an exceptionally attractive calendar containing twelve new views in two colors, each showing one of the spectacular operations in a modern steel mill. The illustration on the front page is a night view of the main plant while it was speeded up on war work and flood-lighted as a war-time precaution. This picture was made from a photographic plate, which had been exposed two hours, and is regarded as a triumph of night photography.

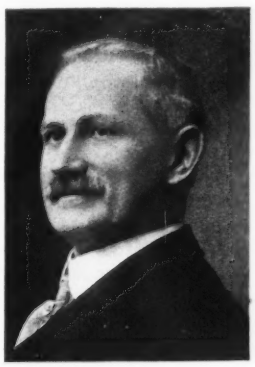
F. E. Myers & Bro., of Ashland, O., following their usual custom, issued a large calendar showing illustrations of a great number of their products. Other attractive features of the calendar are three lithographs, one a view of the concern's large plant, and the two others of F. E. Myers, head of the Myers concern, and P. A. Myers, the manager, respectively.

The Wm. H. Page Boiler Co., of New York City, has issued a very valuable calendar for the heating trade. It is printed in green and black and with figures that can be seen across a large room. Illustrations of some of the company's products are used in its make-up for ornamental purposes.



J. Stahl, president of the Hercules Chemical Co., of New York City, was last week in Boston, Mass., calling on some of his friends in the trade.

William Bapst, for many years connected with the sales department of the Trenton Potteries Co., of Trenton, N. J., has recently been assigned a larger territory, and will hereafter cover the state of New York, Connecticut and Canada, making his headquarters at Albany, N. Y.



R. M. Hastings.

R. M. Hastings, whose likeness is shown herewith, is one of the best known plumbing supply salesmen in western New York and Pennsylvania, in which territory he has called on the trade for more than twenty-four years, representing in that time only two houses. Mr. Hastings has just become connected with the United Brass Mfg. Co., of Cleveland, O., and will cover substantially the territory which he has served these many years.

W. E. McCray has succeeded the late E. C. Chapin as Coast-to-Coast representative of C. F. Church Mfg. Co., of Holyoke, Mass. Mr. Chapin had been connected with the company since 1910.

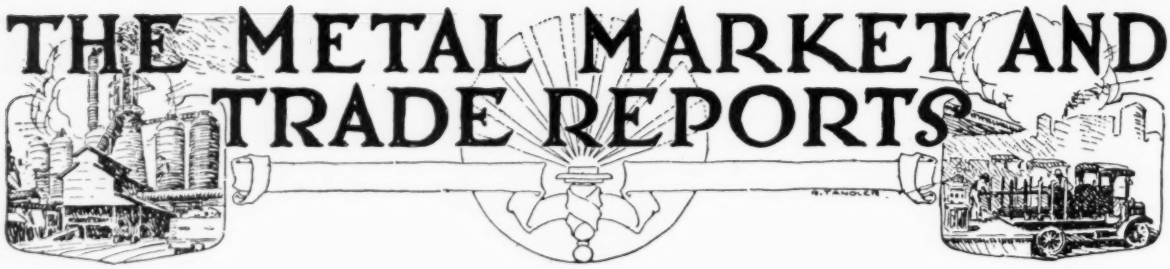
Harry G. Morrow, assistant general manager of sales of the Central Tube Co., Pittsburgh, Pa., and James S. Weaver, manager of the New York office, made a business trip through the New England district this week.

Moe Hirshfield, of Hirshfield & Mayer, of Boston, Mass., was encountered in Springfield last week by a "Domestic Engineering" representative.

Charles R. Emerson, formerly manager of the Boston branch of the Foster Engineering Co., for two years, and later manager of this company's Philadelphia office for six years, up to December 31, 1918, has just been appointed general sales manager of the company and will hereafter make his headquarters at the company's main offices in Newark, N. J.

Prepare to buy Victory Loan Bonds.

THE METAL MARKET AND TRADE REPORTS



Steel and Iron.

An uncertain tone prevails in the steel market at the present time, although there is a fair-sized demand for plates and sheets for foreign shipment. The structural demand is dull, and no real activity is to be expected until the building season opens. Some foreign interests are holding back because of the high freight rates, but a reduction of rates has just been announced, and this will, no doubt, help materially to bring the situation back to normal. There are some things that the trade are thankful for, one of which is the weather. The winter so far has been extremely mild, and in many parts there has been no snow to hamper shipping. And again there is a surplus of labor because of the reduction of output, which will permit of the employment of many more men once there is active buying. On Friday the American Iron and Steel Institute announced that there would be no revision in the steel contract, and furthermore that the Committee on Contract Obligations would be disbanded.

With the knowledge that on February 1st there will be an open market on coke, the producers of iron and steel are devoting considerable time to considering the future of the market. Present indications point to fairly stable conditions based on the large number of idle furnaces. This condition has resulted in a surplus of coke for the first time since war production made itself felt. The export situation offers room for improvement, which will probably come with the better situation in freight rates.

The pig iron market is fairly steady, but the question of price is causing some unrest. Buying is light and represents the immediate needs of consumers for immediate supplies. There is a disposition on the part of the trade to wait and see what happens. The export situation is being watched with more than ordinary interest. The following prices are current on pig iron at tidewater:

No. 2X Philadelphia	$34.25 to $36.15
No. 2 Southern, Cincinnati	34.60 to 39.66
No. 2 Foundry, Chicago	31.50 to 34.00
Basic Valley Furnace	30.00 to 33.50
Bessemer, Pittsburgh	33.69 to 36.00

Copper.

The copper situation remains practically unchanged as the buying element is showing little interest in market conditions, and there is a waiting attitude on the part of producers and consumers as for some time past. The smaller producers, who are quoting at around 20 cents, have thus far been able to take care of the demand, which is from those who require small lots for immediate consumption. But some of the large producers have offered copper at 23 cents, in which the contract guarantees the producers against declines in the market between the time of purchase and delivery. Production is being curtailed as it would not be a wise policy at this time to overstock the market. The representatives of the Copper Export Association have started abroad, and they will study the markets there and report back their findings

Tin.

The tin market is at a standstill. Last week the announcement by the United States Products Co. that in the future all orders for more than 100-pound lots of tin would be taken by them. This eliminates dealers and jobbers, because the jobbers had displayed no ability to sell the allocated tin. With regard to the outlook for continued price control, it was stated that probably 3,000 of the original 10,000 tons of tin allocated to this country had been liquidated through orders from the trade, which is a small precentage of the total. A removal of restrictions is not looked for before the second half of this year, and the trade is taking a gloomy attitude in consequence. The importers are trying to have the restrictions removed and have had a bill introduced which will end control and make the Government stand the cost of making the allocation, or at least arranging for it. The present price is 72 cents.

Lead.

The price of lead dropped half a cent last week. There is no actual market and prices are nominal. The price in New York is 5.50 cents and in East St. Louis 5.20 cents.

Spelter.

The spelter market is better, due to an increase in inquiries and also to the increase in actual business. Prices, however, are low, but the tone is decidedly better. Prime Western, New York delivery, spot, was quoted at 7.40 cents, and East St. Louis at 7.35 cents.

Other Metals.

Quotations on other metals in New York are as follows:

Aluminum (in 50-ton lots)	33 cents per lb.
Antimony, Chinese and Japanese	16 cents per lb.
Solder, No. 1	43 cents per lb

New York Old Metal Market.

The following prices are current for old metals:

	Buying.	Selling.
Copper, heavy	16 to 16½ cents	17 cents
Copper, light	13 to 13½ cents	14 cents
Brass, heavy	8¾ to 9 cents	9½ cents
Brass, light	7¾ to 8 cents	9 cents
Brass turning	8 to 8½ cents	9 cents
Tea lead	3⅝ to 3¾ cents	4 cents
Lead, heavy	4¼ to 4½ cents	5 cents

Chicago Old Metal Market.

Chicago wholesale dealers' prices are nominally as follows:

	Buying.	Selling.
Heavy yellow brass	9½ to 10 cents	11 cents
Brass, light	8½ to 9 cents	10 cents
Brass, medium	8 to 9 cents	10 cents
Red brass	15 to 15½ cents	16 cents
Cocks and faucets	11 to 11½ cents	12 cents
Copper, heavy	15 to 15½ cents	16½ cents

Lead, heavy	4 to 4½ cents	5 cents
Tea lead	3½ to 4 cents	4½ cents
Zinc	3½ to 4 cents	5 cents
Solder joints	12 to 13 cents	14 cents
Mixed babbitt	5½ to 6½ cents	7 cents
Old iron pipe, per ton	$14.00	$15.00

The Pipe Market.

Quotations on less than car lots of full weight steel pipe are as follows:

	Butt Weld		Lap Weld	
	Blk.	Galv.	Blk.	Galv.
⅛ to ⅜ inch	40	12	....	....
½ inch	44	28	....	....
¾ to 3 inch	47	32	....	....
2 inch	....	....	40	26
2½ to 6 inch	....	....	43	29
7 to 12 inch	....	....	40	25

The quotations apply to all shipments from stock, regardless of quantity.

On extra strong and double extra strong steel pipe in less than car lots, quotations are as follows:

	Extra Strong				Double Extra Strong			
	Plain Ends		Plain Ends		Plain Ends		Plain Ends	
	Butt Weld		Lap Weld		Butt Weld		Lap Weld	
	Blk.	Galv.	Blk.	Galv.	Blk.	Galv.	Blk.	Galv.
⅛, ¼ and ⅜ inch	31	6	....	....	....	....	....	....
½ inch	36	11	....	....	25	....	....	....
¾ to 1½ inch	40	15	....	....	28	....	....	....
2 to 2½ inch	41	16	....	....	30	....	....	....
3 inch	41	16	....	....	....	....	....	....
2 inch	....	....	33	8	....	....	23	....
2½ to 4 inch	....	....	36	11	....	....	25	....
4½ to 6 inch	....	....	35	10	....	....	24	....
7 to 8 inch	....	....	31	6	....	....	19	....
9 to 12 inch	....	....	26	16	....	....	....	....

With threads only, the basing discount is one and one-half points lower. With threads and couplings the basing discount is three points lower. The quotations apply to all quantities less than car lots.

Quotations on full weight genuine iron pipe, in less than car lots, are as follows:

	Butt Weld		Lap Weld	
	Blk.	Galv.	Blk.	Galv.
⅛ and ¼ inch	18	+11	....	....
⅜ inch	19	+10	....	....
½ inch	23	3	....	....
¾ inch	28	10	11	+6
¾ and 1 inch	28	10	....	....
1½ inch	28	10	20	4
2 inch	....	....	21	5
2½ to 6 inch	....	....	23	8
7 to 12 inch	....	....	20	5

These quotations are f. o. b. Pittsburgh, and apply to all shipments from stock, regardless of quantity.

On extra strong and double extra strong genuine wrought iron pipe, with plain ends, and in less than car lots, the quotations are as follows:

	Extra Strong				Double Extra Strong			
	Butt Weld		Lap Weld		Butt Weld		Lap Weld	
	Blk.	Galv.	Blk.	Galv.	Blk.	Galv.	Blk.	Galv.
⅛ to ⅜ inch	13	+12	....	....	....	....	....	....
½ inch	18	+ 7	....	....	3	....	....	....
¾ and 1 inch	24	+ 1	....	....	8	....	....	....
1¼ inch	24	+ 1	....	....	8	....	....	....
1½ inch	24	+ 1	....	....	8	....	....	....
2 inch	....	....	18	+ 7	....	....	3	....
2½ to 4 inch	....	....	20	+ 5	....	....	3	....
4½ to 6 inch	....	....	19	+ 6	....	....	5	....
7 to 8 inch	....	....	11	+14	....	....	....	....
9 to 12 inch	....	....	6	+19	....	....	....	....

These retail prices are f. o. b. Pittsburgh, and apply to all quantities except in car lots. With threads only, the basing discount is 1½ points lower. With threads and couplings, the basing discount is 3 points lower.

To ascertain the price in your city, deduct the proper less-than-carload freight rate from Pittsburgh to that city. Example: Base price on ¾-inch black steel pipe is 47 per cent, Pittsburgh, the less-than-carload rate to Patson is 17 cents, and the price, therefore, freight allowed to Patson, 45.3 per cent; on galvanized, 30.3 per cent. All other sizes to be figured on a comparative basis.

Reduction in Prices of Traps, Waste and Overflows.

Some of the manufacturers of traps, waste and overflows have announced a reduction in price, amounting to 10 per cent.

SHORTAGE OF TIN IN GERMANY.

Germany has been suffering from the shortage of tin during the war, and no effort has been spared to avoid its use for other than the most necessary war purposes. Substitutes have been used wherever practicable, and everything that is possible has been done to utilize old tin and scrap which in ordinary times would not be used at all, writes Commercial Attaché Paul L. Edwards from The Hague, Netherlands. It has long been known that brass, nickel cobalt, and lacquer have been used extensively as substitutes for tin in the plating of iron and zinc. The Chemische Zeitung, 1918 (No. 97-99, p. 132), states that one kind of lacquer extensively used is a solution of phenol or cresolin with formaldehyde and alkali.

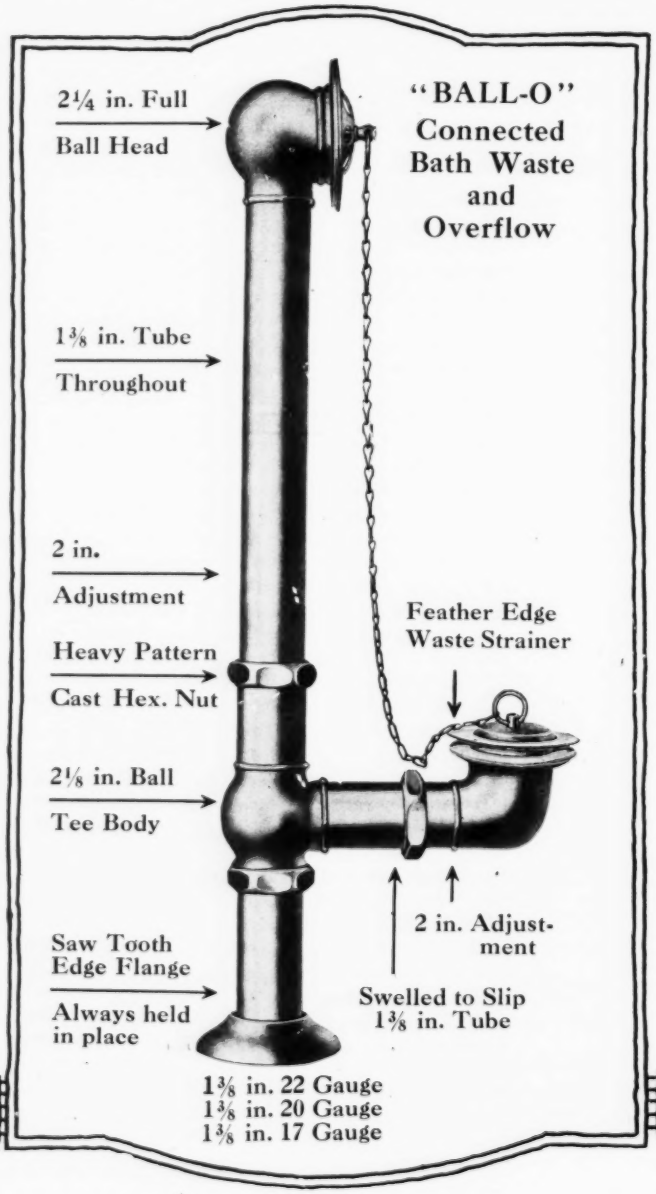
According to recent issues of the Norddeutsche Allgemeine Zeitung, alloy composed of zinc, calcium, and lead is being employed as a substitute for tin for various uses. Indeed, it is reported that two-thirds of the works have adapted their plants to the working up of substitute metals. The works have also been extensively engaged in the recovery of tin by means of mechanical, chemical, and even electrolytical processes.

Large quantities of tin have been recovered from discarded empty jam tins, milk tins, corned beef tins, etc., collected, for instance, at prison camps, and also from cinders and clippings found in old dump heaps. One of the most striking measures taken to secure tin from domestic sources was a proclamation of January 10, 1917, ordering the confiscation of organ pipes made of tin. By this proclamation, all persons, corporations, or societies which possessed organs—particularly churches, clubs, hospitals, prisons, universities, concert halls, etc., as well as makers of organs and dealers—were required to deliver their tin pipes to indicated collecting stations. Exception was made only in the case of articles declared by duly authorized experts to have special intrinsic or historical art value. The confiscation price was fixed at 6.30 marks per kilo ($1.50 per 2.2 pounds), with a minimum of 35 marks per organ, delivery at the collecting stations to be at the expense of the owner. The collecting stations established in connection with this proclamation were also directed to pay 4 marks per kilo for tin parts of musical instruments other than organs which might be offered for sale. The above-mentioned proclamation applied also to alloys made of tin and lead.

The Metallbörse of August 4, 1917, states that the firm of H. Lippman, of Berlin, has secured a new patent for a process for covering one side only of a sheet of metal with tin. The old method is apparently very simple—the plates are fastened together by means of an adhesive substance and passed through the bath. It appears that there have always been difficulties in finding a satisfactory method for separating the plates. The new process avoids these difficulties by sweating the plates together by an electrical process. It has not been possible to find out the extent to which this process has been successful.

"BALL-O"

CONNECTED BATH W



Any piece of WISECO
whatever special trade name
the absolute guarantee of
mechanical or other defects.

While each design is different, to
ciple governs the manufacture of the
manufactured, rolled and finished in our
tion as to quality and accuracy of our raw

Every process of the manufacture is ca
and each piece is carefully inspected bef

You will find the BALL-O Connected
seller and when properly installed will la

J.B. WI

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Manufacturers of Plumbers'

LL-O

H WASTE AND OVERFLOW

- WISECO - TRADE MARK - EST. 1877 - INC. 1912 - INC.

CO Sanitary Brass Goods, by
ame designated, carries with it
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t, to meet specific needs, one basic prin-
f the entire WISECO Line. The brass is
in our own mill, so there can be no ques-
our raw materials.

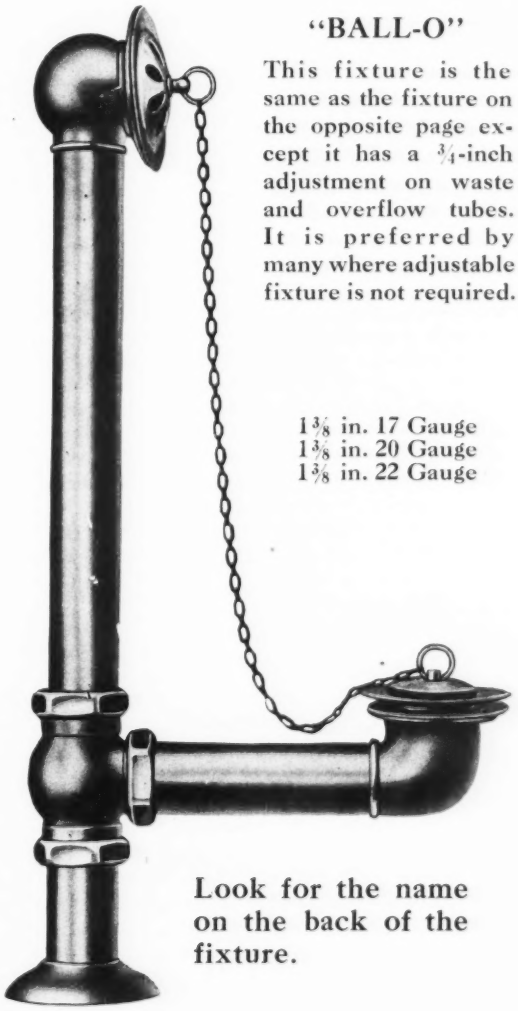
re is carried on under expert supervision
ed before shipment.

nnected Bath Waste and Overflow a ready
will last a lifetime.

ISE, Inc.

rtown, N.Y.

umbers' Sanitary Brass Goods



"BALL-O"

This fixture is the same as the fixture on the opposite page except it has a ¾-inch adjustment on waste and overflow tubes. It is preferred by many where adjustable fixture is not required.

1⅜ in. 17 Gauge
1⅜ in. 20 Gauge
1⅜ in. 22 Gauge

Look for the name on the back of the fixture.

AMONG THE PLUMBING AND HEATING CONTRACTORS

Chicago and Vicinity.

John Farmer, of Paulina Street and Milwaukee Avenue, has been awarded the contract for the installation of plumbing in two residences at 4822 and 4824 Drummond Place.

E. M. Pickett, of 5524 West Lake Street, has been awarded the contract for the installation of a heating system in a residence at 4900 Patterson Avenue.

O. A. Beckmann, of 3919 North Cicero Avenue, will install modern plumbing in a residence at 4900 Patterson Avenue.

N. J. Dougherty, of 173 West Washington Street, has been awarded contracts to install hot water heating in a coal office and flat building, also in the stable and garage at Twenty-sixth and Whipple Streets.

M. Rice, of 8741 Commercial Avenue, has secured contracts for installing plumbing systems in a residence at 9022 Kingston Avenue and in a flat buiding at 8340 Manistee Avenue.

Benjamin Rigby, of 545 West Lake Street, has been awarded the contract for the installation of a heating system in a new $60,000 apartment building at 1644-1650 Fargo Avenue. Alexander Allardyce, of 53 North Clark Street, secured the contract for the plumbing in this building.

F. Runke, of Maywood, has secured the contract for installing plumbing in four bungalows on North Central Avenue.

E. B. Taylor, of 858 East Seventy-fifth Street, has been awarded the contract for the installation of a heating system in a flat building at 8340 Manistee Avenue.

Chas. J. Herbert & Son, of 422 South Dearborn Street, have been awarded the contract for the installation of plumbing in stables at Union Stock Yards, Forty-fifth Street and Packers Avenue.

Philips-Getschow Co., of 130 West Kinzie Street, has been awarded the contract for installing heating systems in $25,000 farm buildings at Roundout, Ill. J. E. Fitzgerald, of Lake Forest, will install the plumbing in these buildings.

Sam Kersten, of 554 West Jackson Boulevard, has secured the contract for installing modern plumbing in a building at 115 North Clark Street.

State Architect Edgar D. Martin, of 104 South Michigan Avenue, is preparing plans for a Memorial Building at Springfield, to cost in the neighborhood of $10,000,000.

Architect Wm. P. Doerr, of 28 East Jackson Boulevard, is preparing plans for a $400,000 apartment building at Hyde Park Boulevard and Dorchester Avenue.

Architect Howard Shaw, of 39 South State Street, is preparing plans for a club building on the campus of the University of Chicago, to cost about $175,000.

Architect J. A. Armstrong, of 11 South La Salle Street, is making plans for a $22,000 residence at Glencoe, Ill.

Architect E. N. Braucher, of 6 North Clark Street, is preparing plans for two bungalows in the vicinity of Division Street and Mayfield Avenue, and for a garage at 1151 Carmen Avenue.

Architect C. H. Frazier, of 30 North Dearborn Street, is preparing plans for a flat building at South Kostner and Archer Avenues.

Architect A. G. Lund, 810 West Sixty-third Street, is preparing plans for a post office at Ashland Avenue and Sixty-fourth Street.

Architects E. B. Shogren & Co., of 2930 East Ninety-second Street, are making plans for six bungalows to be built at Eighty-fourth Street and Crandon Avenue, also for two bungalows on Paxton Avenue, between Eighty-third and Eighty-fourth Streets.

Architect J. K. Cady, of 179 West Washington Boulevard, has completed plans for bank and office building at 4001 West Twelfth Street. Estimated cost, $50,000.

Architect T. J. Reynertson, of 1937 North Crawford Avenue, is preparing plans for a residence at 4037 Gladys Avenue, and another one at Newland and Altgeld Avenues.

Architect J. E. Braband, of 901 Wrightwood Avenue, has prepared plans for a flat building at 2420 North Halsted Street.

Architect E. A. Blondin, of 12 West Garfield Boulevard, is preparing plans for a store, office and flat building, to be built at 5724 South State Street.

Architect J. T. Fortin, of 600 Blue Island Avenue, has prepared plans for a storage building to be erected at 2110-2112 Kendall Street.

Other Cities in the State.

E. E. Lamp, of 617 Seventh Street, Rock Island, has secured the contracts to install plumbing in three new residences now under construction, two of which are in Rock Island and the other at Port Byron, Ill.

M. J. Reilly, of Bloomington, has the contract to remodel the plumbing and heating systems and install new plumbing fixtures in the Stag Hotel in that city.

Adolph Kahles, of Davenport, reports that he has just finished the most successful year in the existence of his business, and that he is looking forward to 1919 as being even better for the Iowa master plumbers than the year just past. Mr. Kahles has had a number of large plumbing contracts the past year, among them being two public school buildings, work on which is now about completed.

Bids are being received for the remodeling of the plumbing and heating systems in the United Presbyterian Church at Washington.

The Wilson Heating Co., of Washington, is installing plumbing and heating systems in a new high school building being erected in that city. The contract for this work will amount to more than $30,000.

The Ideal Heating & Construction Co., of Davenport,

is installing heating and ventilating systems in two public school buildings in that city. These two contracts amount to $83,000.

Wirtz & Schmer, of Muscatine, have the contract to install a vapor heating system in St. Joseph's Convent in that city. This firm also has the contracts to remodel the heating plants in the First National Bank Building and in the Palace Theater Building in that city.

The Ryan Plumbing & Heating Co., of Davenport, has the contract to install the plumbing, heating and ventilating systems in the Scott County Savings Bank Building, which is now under construction in that city. This building will be one of the most modern in the city, and though the present plans are for a three-story bank building, it will eventually be a ten-story structure, seven floors of which will be used for offices. The Ryan Plumbing & Heating Co. has a number of out-of-town jobs, among them an eight-eighty apartment building in Des Moines, and a large number of car shops, round houses and pumping stations being erected in Pennsylvania and New York states for the New York Central System.

Al. Curtis, A. C. Wunder and H. B. McCarter, all of Dubuque, Iowa.—From "Domestic Engineering" Photo, taken at the Cedar Rapids Convention of the Iowa Master Plumbers' Association.

Missouri

St. Louis and Vicinity.

Marcus Loew, New York theatrical magnate, will build a new vaudeville theater to cost $500,000, on Washington Avenue, between Seventh and Ninth Streets, as soon as a lease for the property is signed. Leopold Friedman, Loew's attorney, is negotiating the lease. The site of the new theater is valued at $1,000,000. A large building, surrounded by stores and business lofts, will enclose the theater. Loew has just completed the Palace Theater at Washington, D. C., and the Metropolitan Theater at Brooklyn. Thomas W. Lamb, New York architect, and the Fleischmann Construction Co., New York, will build the new St. Louis house for Loew.

The St. Louis Bar Association will ask the board of aldermen to authorize a bond issue of $2,000,000 to build a new court house at Broadway and Market Streets.

Other Cities in the State.

George Vogt, of 507 Broadway, Monett, has just secured the contracts for remodeling several plumbing systems in residences in that city.

Charles Tretbar, of Neosho, has several plumbing and heating remodeling jobs on his books, which will keep his journeymen busy for some time to come.

California

San Francisco and Vicinity.

There is no material change in the general situation here affecting the plumbing and heating trade, but the outlook is considered more favorable than for some time. Builders are a little slow in letting contracts, but the architects' offices claim to be figuring a great deal of work, for which bids will be called in the near future Here in the city new construction is still largely confined to apartment houses, hotels and plant improvements and extensions, whereas, on the east side of the bay the principal activity is in the erection of homes. Of the latter there has been very little in San Francisco in the past year, but there is a definite movement on foot now to stimulate interest in this kind of construction, with indications that the end of 1919 will find a great many new houses on this side of the bay, as well as on the east bay section.

Among the new apartment houses for this city, bids for which will be let shortly, may be mentioned two five-story steel frame Class C structures to cost about $70,000 and $100,000, respectively, plans having been prepared by Architect William Mooser. Paul Barnum has had plans prepared for a three-story apartment house to be built at Dolores and Hidalgo Streets.

Other Cities in the State.

The California & Hawaiian Sugar Refining Co. has approved plans for the erection of eleven model homes in a new residence section recently developed at the eastern end of Crockett. Only one house is permitted on each lot in the new addition, and water and gas will be piped to each lot. The plumbing and wiring will be high class throughout.

Bids will be called shortly for the erection of a $40,000 lodge building in Richmond, on Seventh Street, between Bissell and Macdonald Avenues, by the Redmen of this city. The plans call for a three-story structure, with modern plumbing and heating. The ground floor will be fitted up as a gymnasium.

The general contract has been let to Harndon & Finnegan, of Sacramento, for the erection of a modern hotel at Arbuckle, to cost $50,000, which will replace the town's only hostelry, destroyed by fire nearly a year ago.

A new tuberculosis hospital to consist of 25 buildings is to be built twelve miles east of Auburn, on the State Highway. Thirteen buildings have already been contracted for and $120,000 has been set aside by different counties of the state to meet the expense. The administration building, which is one of the two main buildings, is nearing completion. The C. J. Mathews Construction Co. has the contract for 13 buildings.

The Metropolitan Redwood Lumber Co. is to build a new hotel and office building at Fortuna.

The Board of Education of Los Angeles has called for bids for furnishing and installing gas radiators in the kindergarten bungalow of the Magnolia Avenue School.

Bids will be received up to February 10th by the Board of Supervisors of Los Angeles County for the installation of complete plumbing and steam heating systems in the matron's quarters at the County Hospital in Los Angeles.

Plans are under way for the erection of a modern hospital in Calexico at a cost of about $355,000 D. A. Leonard is chairman of the committee, which has the matter in hand.

Indiana

Indianapolis and Vicinity.

Steps to co-ordinate the efforts now being made to find employment for Indiana's returning soldiers and sailors, as they are discharged from the Federal service, were taken at a conference in Indianapolis, Friday afternoon, following a luncheon to a number of representative business men by L. C. Huesmann, president of the Central Supply Co., and Federal Labor Director for Indiana. As a result of the meeting members of an executive committee, comprising representatives of the war benevolences, were named to work under Andrew Wahl, Indianapolis director of the United States Employment service, in placing applicants for jobs, who are wearing the national uniform.

C. L. Kirk, vice-president and general manager of the Indianapolis Water Co. and vice-president of the East Chicago and Indiana Harbor Water Co., announced this week that bids for an 8,000,000-gallon capacity water filtration plant, at East Chicago, Ind., the estimated cost of which is $300,000, will soon be constructed. Mr. Kirk said the bids will be opened February 25th and that work on the plant will begin thirty days after the contract is awarded. It will require probably a year and a half to complete the plant, he said, but the water will be improved gradually as sedimentation basins are completed. Arrangements have been made to finance the building of the plant through a bond issue. The action of the two companies in beginning work on the proposed purification plants brings to a close a long agitation for improved water service for the two cities.

Frank Callon, of the plumbing and heating firm of Callon Bros., at 24 South Alabama Street, returned last Friday from Portland, where he attended the big three-day dedication of Jay County's magnificent new $500,000 court house, said to be one of the most conveniently arranged court houses in the United States. The heating, plumbing and ventilating systems in the building were installed by the Callon firm at a cost of approximately $30,000.

Fishman Bros., of 838 South Illinois Street, have received the contract for the installation of the plumbing system in the new $15,000 apartment building that is to be erected at Twenty-sixth Street and College Avenue, Indianapolis, for E. J. Ostling, 2442 Bellefontaine Street.

Other Cities in the State.

Frank Marchesseau, of Elkhart, head of the plumbing and heating firm which bears his name, has been appointed a member of the board of police commissioners, succeeding Oscar Jay, whose term of office had expired. Mr. Marchesseau, who had been a member of the city board of health, has the respect and high esteem of all Elkhart citizens.

The William Sibley Co., of South Bend, has been awarded the contract for the installation of plumbing and heating systems in the new $23,000 school building that is to be erected in Penn Township. Work on the new structure will be started early in the spring.

The contract for the installation of modern plumbing and heating in the new $7,000 dining room that is to be erected at Boehne Camp, near Evansville, for the Vanderburgh Anti-Tuberculosis Association, has been awarded to the Evansville Plumbing Co., of 1026 West Franklin Street, Evansville.

William Lesh of 4508 Connecticut Street, Gary, was the successful bidder for the plumbing contracts on fifteen new bungalows soon to be erected in that city, for the Indiana & Illinois Land Co., of 3809 Delaware Street.

G. Austgen, of 833 Elm Street, Hammond, has been awarded the contract for the installation of plumbing in the new residence at 922 Erie Street, for F. Wachewrez.

The contract for the installation of the plumbing and heating systems in the $16,000 apartment building that is to be erected in Gary for Anderson Brothers, has been awarded to Burke Brothers, 521 Washington Street, Gary.

Michigan

Detroit and Vicinity.

The C. H. Dean Co., of 562 Grand River Avenue, has secured the contract for the installation of modern plumbing in a $125,000 office and factory for the Aluminum Castings Co., in Detroit.

C. G. Kuennen, of Grand Rapids, has secured a contract for the installation of plumbing in John Widdecomb Co.'s power house in that city.

Ed. Pulte of Milwaukee, representative of Wolverine Brass Works, of Grand Rapids, Mich., and Sy Martin, of H. P. Martin & Sons, of Owensboro, Ky.—From "Domestic Engineering" Photo.

Tennessee

Memphis and Vicinity.

Captain Ed McGowan, of McGowan Plumbing Co., on Madison Avenue, Memphis, has just returned to the city after many months' absence and taken up the management of his plumbing and electrical business, which was managed by Mr. Loring during McGowan's service in the army. Captain McGowan trained many soldiers in a camp near Laredo, Texas.

William Ross, manager of Crane Co.'s branch in Memphis, has just returned from the Mississippi Valley Trade Convention at New Orleans, La.

Dan McGrath has just assumed his duties as plumbing inspector in Memphis. Mr. McGrath was for some years a member of the plumbing firm of Pepin & McGrath.

A. T. Pepin, of High Street, reports having secured contracts for remodeling plumbing systems in several residences. He has just returned from a trip to Sheffield, Ala., and neighboring towns.

Leopold M. Rhodes, of the plumbing firm of Rhodes Bros., 126 Poplar Avenue, Memphis, is still serving his country in France. He has been overseas nearly fourteen months.

H. Smith Heating Co., Court Avenue, Memphis, has

just finished the installation of steam heating systems in the United States Bedding Co.'s factory, and in Jos. Rosenstein's new building, both in this city.

Jos. Wade, plumbing inspector at Knoxville, has just assumed his new duties as a member of the Lower House at Nashville. Hugh Rule has been mentioned as his successor in the office of plumbing inspection.

New Jersey

Walter Goller, of Egg Harbor, is installing plumbing in the new warehouse that is being erected in that town. The contract amounts to $2,500.

H. Burkhardt, of Ocean City, is installing plumbing in twelve bungalows now being built in Ocean City. The contract amounts to $25,000.

John Gibson, of Atlantic City, has the plumbing contract on a new apartment house being built on Ohio Avenue in that city.

Pennsylvania

Pittsburgh and Vicinity.

E. A. Diebold, of the Diebold Lumber Co., does not believe in waiting for the cost of building to come down, as is shown by the fact that he has taken out permits for the erection of three nine-room brick veneer residence buildings at Bartlett and Murdoch Streets, to cost $21,000. The houses are to be equipped with modern plumbing and hot water heating systems. At the building inspector's office it was said that this is one of the most encouraging permits issued thus far, and should do a great deal to encourage others who are thinking of building at this time.

That there is considerable improvement in conditions here is shown by the statement of prominent architects that they have plans in preparation, which, when acted upon, will stimulate building to a large extent. One architect said recently that he had just received bids on a residence, and in the matter of materials the cost would be very little more, if any, than it would have been 18 months ago, when he first figured on the plans.

Albert Bertalott, Jr., who is going to erect 10 homes on Squirrel Hill, all of them for sale, says he is going to begin the first of them as soon as possible because of a growing demand for residences at, or around, $10,000 each. This is the class of dwelling he is planning to erect. In Dormont borough three new residences have been started within the last few days, and a brick and stone flat building was begun there last week.

Philadelphia and Vicinity.

W. G. Cornell & Co., of Philadelphia, have been awarded the contract to install plumbing and heating in the new addition to Gray's Ferry Hospital, now being built by the United States Government at League Island.

B. G. Carpenter, of Wilkes-Barre, has secured the contract for the installation of plumbing and heating systems in twenty-five garages to be built by Du Pont de Nemours Co. at Wilmington, Del. The contract amounts to approximately $12,000.

Hirst Bros., of Tacony, have dissolved partnership. Mr. Geo. Hirst will continue the plumbing business at the old stand on Torresdale Avenue, while Wm. Hirst has opened a new establishment on Tabor Road.

Massachusetts

W. A. Gilchrist, a Wakefield plumber, who has had his place of business at 92 North Avenue, has found it necessary, because of his growing business, to seek larger quarters and is soon to locate in what is known as the "Old Bank Building" at the corner of North Avenue and Albion Street.

Carroll Bros., of Lowell, of which Daniel F. Carroll, president of the State Association of Master Plumbers, is a member, have recently completed an important contract for heating and ventilation in connection with a $180,000 addition to the Bartlett School in that city. The plumbing contract, which included the installation of new modern fixtures in the old building as well as the work in the new addition, was handled by John J. Mullaney & Co., of Lowell.

A number of fine residences are soon to be erected at Quincy, and in some cases work already has been started. John Granahan has started a dwelling for himself on Flagg Street; work is to be started soon on a dwelling on Newbury Street for W. E. Kilpatrick; Morton & Marden are erecting two houses on Whitewell Street; E. H. Sears, a local builder, is erecting a home for himself on West Elm Avenue, and a new residence on Presidents' Avenue for Oscar A. Swanson is nearing completion.

Plans have been announced for the erection of three two-family houses on Harold and Gordon Streets, Somerville, at a cost of $5,000 each. The general contracts are in the hands of M. McCollar, of 358 Broadway, Somerville.

John E. Hickey, town clerk of Webster, has announced that he will receive bids in the early spring for the construction and other work in connection with a $6,000 house which he plans to erect for his own occupancy. F. H. Gowing, of 18 Tremont Street, Boston, has prepared the plans.

Architect H. Bowditch, of 44 Bromfield Street, Boston, expects to have plans ready for figuring soon for a public garage to be erected at 57 and 59 West Dedham Street, Boston, for the Electric Garage Trustees. The building will be two stories high, and will cost about $150,000.

Rhode Island

The Providence Master Plumbers' Association, at its annual meeting, on January 16th, elected H. H. Dauphine president; John E. Graham, vice-president; William M. Hellar, treasurer; James Phillips, secretary; James E. Cottrell, sergeant-at-arms. The executive committee is composed of the officers and C. P. Brennan, F. G. Merewether, Thomas E. Manney and Thomas J. Tierney. The officers will be installed at the next meeting of the association, at which time it is planned to have a banquet and other interesting features. Peter E. Loughran was made a chairman of a committee to arrange the details, the other members being C. P. Brennan and Thomas Hussey.

Late News from Georgia.

T. Wood & Co., of Dawson, are moving their plumbing and heating business into larger quarters in that city.

The Dawson Sheet Metal Works is the name of a new heating and metal-working concern, which has just started in business at Dawson.

Wisconsin

THE ADVANCE OF MODERN SANITATION IN WISCONSIN DURING 1918.

Plumbing Division of Wisconsin State Board of Health Issues Interesting Report.

The Plumbing Division of the Wisconsin State Board of Health has just issued its annual report for the year just ended. The document is so thorough and instructive that it will no doubt be read with interest by many of our readers. It follows herewith:

Advance in sanitary reforms, especially in the field of industry, and notable progress in the installation of public water supply and sewerage systems in Wisconsin, are to be noted in reviewing the Plumbing Division's activities during 1918. Sanitary plumbing has taken rank among the absolutely necessary equipments of places where people dwell or work. Despite restrictions imposed by war-time needs, necessitating temporary curtailment of building on account of materials and labor shortage, the introduction of sanitary plumbing, private and public systems of water supply and sewage disposal, and drainage improvements, has continued in such a degree as to require constant attention from this office and its three field men throughout the year.

There was marked activity in the installation of sanitary improvements in industries, especially those of a war-time nature. These constructions began in 1917 and reached their height in 1918. The war work of many companies necessitated considerable remodeling to provide for the needs of new women employes, and the work of the plumber was a necessary factor. War work rearranged many industrial systems, and numerous Wisconsin plants came to employ large numbers of women workers. Remodeling was necessary in some plants to provide proper toilet facilities for this class of workers, and much time of the field men was given to supervising these improvements. The war also affected the local plumbing inspection service in some cities by drawing into government employ local inspectors who were giving good service to their municipalities.

Plumbers in the War.

The roll of honor for Wisconsin plumbers reached praiseworthy proportions in 1918. The records show that some 300 members of the craft in the state entered Government service in one capacity or another.

Progress in Inspection.

The field force of this department has undergone no changes. On the examining board, J. E. Robertson, who resigned, was succeeded by Frank J. Smith, of Milwaukee. The examiners held two state-wide examinations at six different cities, licensing 36 candidates for journeyman and 22 master licenses. Seven initial contractor's licenses were issued. Under the new ruling permitting exchange of licenses, fifteen master plumbers exchanged their master licenses for journeyman licenses, a fact indicating there was a need for this new rule of the State Board of Health.

Co-operation With Other Departments.

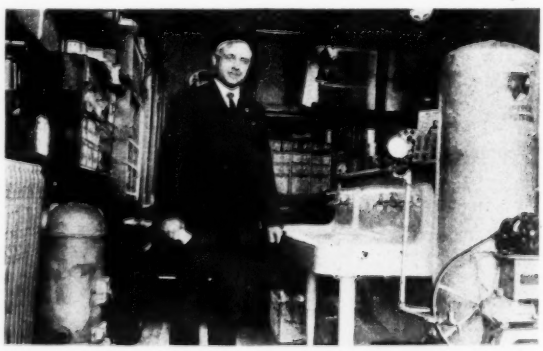
The division's field men have co-operated in enforcing, with the Industrial Commission, the general orders of that department and the State Board of Health, relative to toilet rooms for public buildings and places of employment. By this new arrangement progress has been made towards co-ordination of the work of the two departments, and the elimination of duplicated inspection. The result has been conservation of time, efforts and money by the two departments.

Where no local building or plumbing inspection department exists, these requirements are enforced, so far as practicable, either by the State Board of Health or the Industrial Commission, or by them jointly, through their authorized inspectors. Where local building departments exist, the requirements are enforced with the co-operation of the local plumbing inspection department. Where no local building inspection department exists, the local plumbing inspector, if provided, enforces the rules in co-operation with the Industrial Commission and the State Board of Health. These regulations apply to all new buildings in the state except private residences and two-family flats.

The Plumbing Division's efforts to effect a higher grade of toilet accommodations for rural schools have been linked with those of the state department of public instruction. During the year the division assisted local school authorities in 127 instances to provide school toilet accommodations, water supply or waste disposal in approved manner. Similarly the division co-operated with the Industrial Commission by furnishing advice, blue prints, specifications and instructions for industrial plant toilets, water supply, sewerage disposal, etc. Such cases reached a total of 84 during the year. The problem of dairy waste disposal, which the Dairy and Food Commission meets constantly in its work, received attention from this department also, and during the year the Plumbing Division gave assistance in 28 cases, designing dairy waste disposal plants or aiding in other ways.

Local Inspection.

Fifty-two cities have provided for complete or partial local inspection, most of the inspectors performing other city duties as well. These cities have a total population of 864,215. Two hundred and thirteen cities and villages having a water or sewerage system, or both, including 18 water systems for fire protection only, have not provided for local inspection, although a few have adopted rules and regulations. In these communities and on farms and in cities and villages having neither public water nor sewerage systems, a large number of installations are dependent entirely upon the state for supervision. Their population is approximately 1,469,545. The population served by state inspection only is 60 per cent; by local and some state inspection, 40 per cent.



J. J. Neuman, and an Interior View of his Plumbing Establishment at Beaver Dam, Wis.—from "Domestic Engineering" Photo.

Public Water and Sewerage Systems.

The records show a total of 245 public water supply systems and 151 sewerage systems in Wisconsin. Municipally owned water systems, not including 18 for fire protection only, number 216, and about 29 are owned by private corporations.

New systems were constructed in a number of places in 1918, and about 19 more are in contemplation. In others extensions of existing systems have been made, permitting home owners to equip their dwellings with sanitary plumbing and to abandon insanitary buildings. Constant agitation concerning the deplorable results of cesspools, surface disposal and insanitary outhouse facilities in use in many places is tending towards the more general adoption of central systems of sewage disposal. The time is coming when the discredited cess pool and privy will be discarded entirely. The zone ordinance recommended by the Plumbing Division has helped materially, where it has been used, in eliminating outhouses. Towards this reform many officials have contributed, including deputy state health officers, hotel inspectors, deputies of the Industrial Commission, plumbing inspectors and local officials. The more zone ordinances are adopted, the sooner will the common outhouse disappear.

Rural School Sanitation.

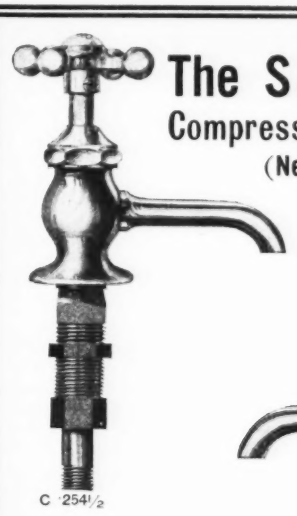
This department, with the aid of the State Department of Enginering, Industrial Commission and State Department of Public Instruction, issued in 1918 a bulletin entitled "Wisconsin Code for Rural School Privies." It also published a new edition of "Rules for the Sanitary Care of Schools." Under the new standards embodied therein, rural school authorities must conform to certain minimum requirements whenever they construct new school privies or alter existing privies. If faithfully followed (and they must be, if the district desires not to lose special state aid of $50 per year), these regulations will lead to the gradual elimination of the insanitary rural school outbuildings which has given an unsafe and unwholesome environment to thousands of country schools. The code defines what shall constitute a sanitary privy and requires close compliance with its provisions in order not to jeopardize its right to state aid. The code includes a bill of materials for each of the several types of privy recommended. Copies of the code were sent to every school district in the state and will be supplied to anyone interested.

Chemical or Dry Closet Systems.

The State Board of Health adheres to its stand against the indiscriminate use of chemical or dry closet systems. It requires school districts to file specific data on the conditions existing in schools where it is proposed to install these devices, and then passes upon the proposed installation in regard to the sanitary features involved. Approval to install is given, where the conditions are considered such as to afford reasonable safety. Blanks are sent out for the required data, and when filled in must be sent to the Industrial Commission for approval, or mailed directly to the State Board of Health. No such installation may be accepted by the school district until it has been inspected by an official of the state board.

Educational Exhibit Shown.

The Plumbing Division continued its educational work in 1918 through the press and the display of its exhibit at fairs and conventions. The exhibit called attention to proper and improper systems of installing plumbing, providing sewage disposal, water supply, garbage removal, etc., and to proper and improper home environments. It



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C 254½

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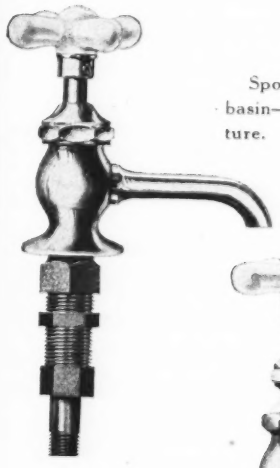
Spout extends well over basin—a very desirable feature.



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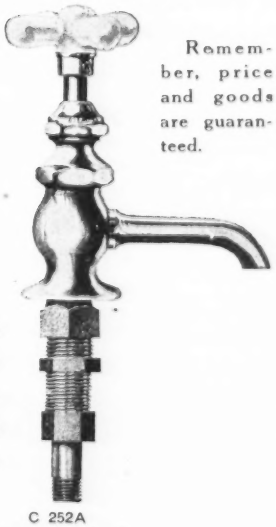

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Locates and mends a cracked section permanently in 10 to 30 minutes without interfering with use of boiler.

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Economy Scale Remover Co.

Chicago Heights, Illinois

was shown at the Dane County Fair, Madison; Green County Fair, Monroe; Dodge County Fair, Beaver Dam; Northern Wisconsin State Fair, Chippewa Falls; the State Fair, Milwaukee, and the conventions of the Tri-State Medical Society and the Supervising Teachers of Wisconsin, and the Biennial Conference of Health Officers, in the state capitol. These gatherings led to many inquiries looking to the introduction of sanitary reforms in homes and industries, especially upon farms.

Education Through the Press.

Education along sanitary lines, and with the more general adoption of the advantages of sanitary plumbing in view, was continued through the year by the educational bureau in the department. Its contributions along these lines have been widely published, among its mediums of publicity being the newspapers of the state, the quarterly bulletin of the State Board of Health, the "Wisconsin Bankers' Farm Bulletin," farm journals, the trade papers in the plumbing line, etc. These contributions concerned good and bad plumbing and their relation to health; sewage disposal, water supply, heating, ventilation, with special reference to these conditions in and around farm homes. Wisconsin farm homes are being equipped with sanitary features, such as private water supplies and sewage disposal plants, in an increasingly large degree. This is one of the fields of largest promise, not only to the plumbing trade which can profit by it, but to the workers in the field of health and sanitation. It is a field to which relatively little attention ever has been paid, and which must be provided with the means for better and safer living and working conditions, if rural life is to be protected from disease and the young people kept from migrating cityward.

County Fair Sanitation.

A new impetus has been given in the last year to the movement for better toilet facilities at county fairs. It is one of the signs of the times, which we can hail with gratitude, that fair officials are beginning to take notice of the deplorable sanitary conditions surrounding fair toilets. The condition of the antiquated contrivances for the use of thousands of visitors each fair season needs no particularizing. It is familiar to all. We desire to mention here, among others, certain Wisconsin fairs which have been equipped with sanitary, water-flushed toilets and safe and wholesome environments. These include the Green County Fair, Monroe; the Northern Wisconsin State Fair, Chippewa Falls; the Brown County Fair, De Pere, and the Fond du Lac County Fair, Fond du Lac. The plans for these were designed by the Plumbing Division.

In the Fond du Lac toilets, a women's rest room, equipped with lavatories and provided with an attendant, is fitted up in connection. It needs no argument to prove that these places constitute an educational object of the highest value in bringing the benefits of sanitary plumbing and decent surroundings to the attention of the general public, and more especially of the rural inhabitants.

A study was made by the division into the state fair toilet facilities, with a view of correcting objectionable conditions which have existed for many years.

Enforcement of Orders.

Under a rule adopted by the State Board of Health in January, 1918, the state health officer is empowered to act for the whole board when that body is not in session, in issuing orders enforcing certain provisions of the state plumbing code. He also is authorized to revoke plumbers' licenses where they have been obtained through error or fraud, or where the holder is grossly incompetent or has been guilty of a second willful violation of the rules

prescribed by the State Board of Health. In such cases the plumber is allowed a hearing to protest the revocation.

The Apprenticeship Plan.

The policy of vocational education for young plumbers is advancing steadily in the state in the wake of the amendments to the 1916 law which created a state board of industrial education. The necessity for more care in the selection of plumbing apprentices is plain to every tradesman in the craft. If a low grade of apprenticeship has been the rule in the past (and it is generally conceded such has been the case), it has been due to improper selection of apprentices and lack of sympathetic direction and co-operation on the part of the master and journeyman. An untrained or half-trained apprentice, or one whose inclinations are in other directions, lowers the standard of plumbers and plumbing, if left without conscientious direction and instruction. Indenturing of apprentices exerts a steadying influence. One out of five apprentices in the plumbing trade leaves it before acquiring sufficient skill to become of real value.

The situation regarding apprentices led, during 1918, to the beginning of a standardized apprenticeship indenture system for the plumbing trade which was pushed to a working basis. Towards this end were directed the efforts of the State Association of Master Plumbers and the State Association of Journeyman Plumbers, the Industrial Commission, and the State Board of Health. Their conferences led to the creation of a joint committee known as the Wisconsin Plumbers' Apprenticeship Board, an advisory body charged with carrying out the apprenticeship program.

This committee consists of: F. C. Kuetemeyer, J. E. Robertson and A. S. Dahl, Milwaukee, representing the master plumbers; Leonard Mathews, Janesville, Fred Heise, Milwaukee, and Ed Thal, Racine, representing the journeymen; Frank R. King, state plumbing inspector, representing the State Board of Health, and Stewart Scrimshaw, supervisor of apprenticeship, representing the Industrial Commission. For more detailed review of progress made in this field, reference is made to the forthcoming biennial report of the Plumbing Division (July 1, 1916, to June 30, 1918).

Rural Home Comforts.

Reports of assistant state plumbing inspectors from the field, inquiries made direct to the department, and the increased activity of manufacturers give evidence of the growing demand for private water systems and sewage disposal for homes and institutions lacking public systems, especially farms. This department has devoted much time to work in this line and sees in it a promising field for the tradesman as well as a source of great and potential benefit to all who thus equip their homes and business. From the Plumbing Division's biennial report we quote:

"In rural homes where a public water supply is not available, an efficient, durable and satisfactory water system of the 'compressed air storage' or 'air pressure delivery, direct from the well' type can be installed at reasonable cost considering the protection and comfort thus afforded. For either type a wind mill, gasoline engine or electric motive power may be used. Such parts of the system as need protection against frost may be housed in the basement, under ground, or in the barn. For any of these methods the plumbing fixtures in the home and other farm buildings can be supplied with an adequate and safe water supply."

Similar advice is given on a private sewage disposal plant of the septic tank type. Farm homes thus equipped

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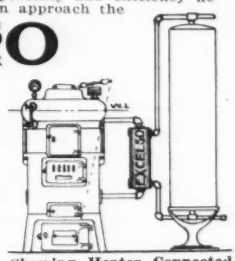

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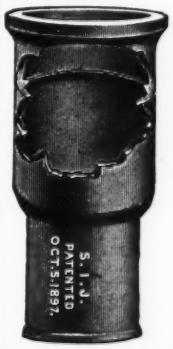

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does away with springing of stack and removing whole lengths of pipe. Cheaper and makes a most satisfactory job.

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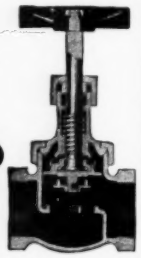

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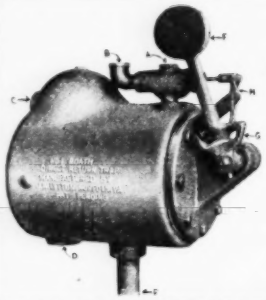

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Embodies **a new** and **exclusive** DOLE principle by which you can have every degree of opening required in vacuum or vapor steam heating.

This Adjustment is easily made while the steam is on.

Nothing like it on the market.

Furnished with the DOLE **without extra cost.**

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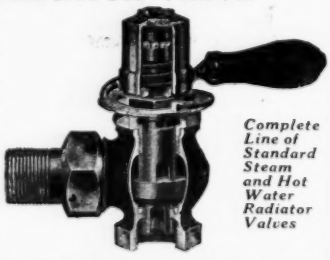


Complete Line of Standard Steam and Hot Water Radiator Valves

THE DOLE VALVE CO. 208 No. Wells St. Chicago

have the same plumbing conveniences as city homes, usually at no greater cost.

Dairy Waste Disposal.

Dairy waste problems continued to interest the department during the year, and indicated the need of careful investigation before new plants are located. It is absolutely necessary, if nuisances and unnecessary expense are to be avoided, that the dairy plant be located properly in the first place, such as near a large stream of water or on ground affording other adequate drainage features, culminating in a satisfactory outlet. Each dairy waste disposal is a problem in itself, requiring specific treatment in accordance with the peculiar conditions existing.

Water Waste.

Studies made during the year, and reports from widely separated cities, have convinced this department that a tremendous loss is occasioned to the tax-paying public of Wisconsin through water waste. Leaky faucets, joints and pipes, defective valves, improperly designed or selected fixtures and other appliances, and especially unmetered systems, cause the loss of millions of gallons of water annually, all of which must be paid for, and which eats up vast stores of coal sorely needed for commercial uses. Our observations prompt the suggestion that the average plumber owes a duty to the public in this regard. His visits to private homes and industrial plants give him opportunity to notice the large waste of water and it should become his duty to report such cases to the owner or the water department, with the object of having the waste eliminated at the earliest date possible. It is our desire to bring this matter more prominently to the notice of the general public, engineers, architects and especially the plumbing trade.

Aims of Plumbing Division.

This division is making a comprehensive study of what constitutes efficient, economical and sanitary plumbing, water supply and drainage installations. It endeavors to formulate and disseminate information needed to bring about such installations and to assist local governing bodies in doing the same. It assists local officials, school boards, institutions, architects, plumbers and others, by furnishing blue prints, specifications and instructions, to institute proper methods of waste disposal and to insure against the creation of a nuisance and the pollution of water supplies. The calls for aid in this field of domestic engineering have multiplied in the last year.

In general, progress made by the Plumbing Division has been satisfactory. Sanitary conditions in general have been materially improved. On every hand co-operation has been extended, leading to better plumbing and a higher grade of plumbers, safer standards, and more economical, simplified and efficient installations.

Dodging It.

"Hubby, if I were to die would you marry again?"

"That question is hardly fair, my dear."

"Why not?"

"If I were to say yes you wouldn't like it, and to say never again wouldn't sound nice."—"Pittsburg Sun"

Had All He Advertised.

Two facetious cockneys were passing a Dublin butcher's shop the other day when, seeing the owner standing at the door, they decided on a laugh at his expense.

"Well, old boy," said one of them to him, "according to your notice on the window you have cuts to suit all purses."

"An' sure, so I have," replied the butcher.

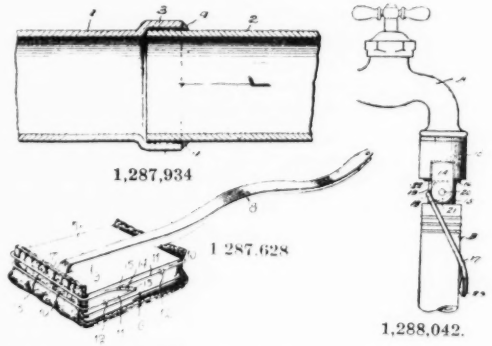
"Well, then, what sort of a cut can you give me for an empty purse?" he was asked.

"A cowld shoulder, of course."—"Chicago News."

Patents

Plumbing Department.

1,287,934. Welded Pipe-joint. Dexter B. Farnsworth, Jr., Tulsa, and Walter Z. Allen, Sapulpa, Okla. An oxy-acetylene welded pipe joint comprising a first pipe member having an enlarged receiving opening at one end thereof and a second pipe member extending into said receiving opening and providing an annular space between said first and second members extending the length of said second member within said opening, the end rim of said receiving opening being welded to the outer surface of said second pipe member which it encircles, said annular space being maintained in an open condition so that the joint may be angular.



1,287,934

1,287,628

1,288,042.

1,287,628. Bath-brush. Reed Brown, Clinton, Ill. The combination with a brush head, of a U-shaped member pivotally mounted adjacent its ends upon the opposite sides of the head, U-shaped clamping rods having parallel arms slidably mounted upon the sides of the brush head, the arms of one clamping member being disposed out of longitudinal alinement with the arms of the other clamping member, the arms of the respective clamping members being pivotally connected at their terminals to the ends of said U-shaped member at opposite sides of its pivots, the medial portions of said clamping rods being adapted to engage and clamp a cloth against the ends of the brush head at points adjacent the opposite side faces of said head and the medial portion of said U-shaped member when the rods are in their effective clamping positions, extending across one end of the head and frictionally held upon the cloth engaged thereon.

1,288,042. Faucet Connection. Walter Marion Kuhlman, Cleveland, Ohio. In a faucet connection, the combination of an open ended member having an internal shoulder near one end forming a socket and adapted to be secured to a faucet at its other end, said member having a pair of ears extending longitudinally from opposite sides of the said first end, a gasket seated on said shoulder, a second open ended member having a peripheral flange at one end adapted to seat in said socket against the gasket, and a bail stamped from a single piece of sheet metal with cam heads bent laterally from the inner edges at the free ends of the bail to provide external shoulders on the ends of the bail at the junctures of the cam heads therewith and said cam heads having outwardly extending and axially alined eccentric pivots, said bail being adapted to be compressed at its free ends and the pivots being adapted to be sprung into said ears with the cam heads against the inner walls thereof and in

Daily Report of Petromortis Victims in Garages

Are you responsible for any of these victims in your locality?

Contents of clipping below taken from the Chicago Tribune.

Motorist Killed by Gas from His Own Automobile

Lester C. Young, 43 years old, of 7914 Yale avenue was found dead in his garage at 7930 Princeton avenue last night, asphyxiated by gas from the exhaust of his automobile, which he was repairing. When he did not return home during the day his family notified the police, who found him dead on the garage floor.

FROM CHICAGO TRIBUNE
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Install Dehn's "Peerless" Garage Drainage System to avoid similar experiences.

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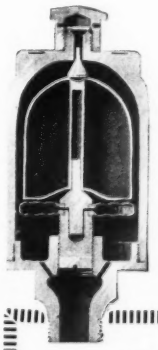

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that hot air does not reach, by installing the

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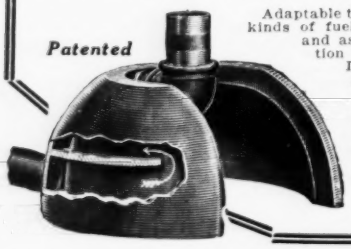

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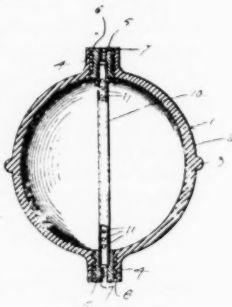
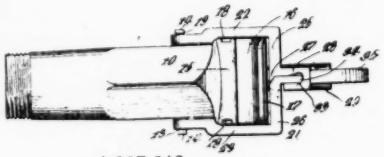
registry with said shoulder of the first member, the cams being adapted to lie closely against the opposite sides of the second member and support the ends of the bail in spaced relation to the opposite sides of the outer end of said second member for admitting the end of a hose thereabout, and to support the bail arms with their flat faces in position to receive pressure of the fingers for swinging the bail without injury to the fingers and with said external shoulders of the bail in position to engage the edges of the ears for limiting the movement of the bail.



1,286,791.

1,286,791. Reversible Ball Flush-Valve. Geo. A. Sall, Yougstown, O. A ball flush-valve comprising a body, oppositely disposed hollow enlarged portions formed on said body, a perforated tube disposed in said body, collars embedded in the enlarged portions and secured to the ends of the tube, and screw threads formed in each of the collars to permit a valve stem to be connected to either end of the body and to permit air to enter the body from the bottom thereof and to be distributed therein by the tube.

1,287,646. Faucet. Charles W. Crenshaw, Carterville, Mo. In a faucet, the combination with the body having a bore therethrough and a head on the outlet end, the face of which head is convexly curved, of a cut-off gate fitted to and slidable over said curved face, a handle for supporting said gate pivoted to the body and formed of two separable



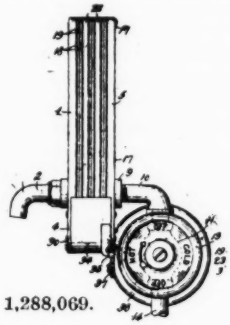
1,287,646

interlocking members, and resilient means between the gate and the handle to hold the gate against the curved face of the head and the handle in engagement with its pivots, said resilient means being yielding under pressure to permit removal of the handle and gate.

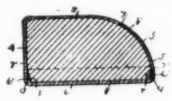
1,288,069. Electric Water-heater. Antonio Longoria, Cleveland, Ohio, assignor to the Sterling Corporation Company, Cleveland, Ohio, a Corporation of Ohio. An electric water heater, comprising a casing having water passages therein, a valve controlling the flow of water through said passages, said valve having two open positions and a closed position, an electric heating element adapted to heat the water flowing through said passages, an electric circuit for said element, and a switch controlling said circuit, said circuit having a closed and two open positions and being so connected to said valve that in one of said valve positions the switch is closed and in said other open valve position the switch is open.

1,287,942. Water-closet Seat. Tilghman J. Florey, Washington, N. J., assignor to American Sanitary Works, Washington, N. J., a corporation of New Jersey. The combination with the wooden body of a closet seat having its lower inner and outer edges tapered upwardly from the bottom plane, of a sheet of material such as celluloid adhesively applied to the bottom side of the body, its lateral margins bent upwardly and cemented to the tapered portions of the body, a second sheet of similar material adhesively applied to the top and opposite edge surfaces of the body, the oppo-

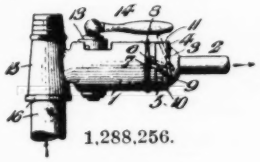
site margins of said sheet over-lapping the upturned tapered margins of the first sheet and the edges of the second sheet adjacent the plane of the bottom of the body rounded off for rendering the joints between the sheets invisible from the top and edges of the seat.



1,288,069.

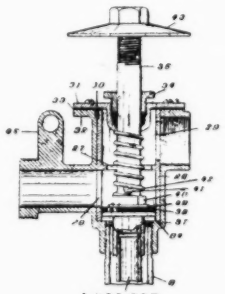


1,287,942.

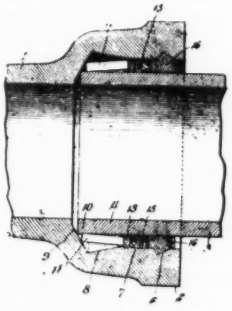


1,288,256.

1,288,256. Pipe or Hose Coupling. Charles F. Steiger, Camden, N. J. A cock or like article, a yoke-like device pivotally connected with the shell of said article, a tubular thimble with which a pipe or hose is attachable, and a shoulder, and a tubular nipple on said thimble, said nipple being adapted to enter an end of said shell, and said yoke-like device being adapted to engage said shoulder and embrace an adjacent portion of said thimble, said cock or like article having its ported plug provided with a handle which when said article is open is adapted to overhang said yoke-like device in the locked position of the latter as a stop preventing the displacement thereof and uncoupling action.



1,288,387.

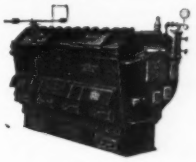


1,288,092.

1,288,387. Flushing Apparatus for Water Closets. William F. Conran, Brooklyn, N. Y. In a flushing apparatus for water closets, the combination with a hopper and a flushing tank, of a flushing valve casing having two ports opening into pipe connections projecting at right angles to the casing, one connected to the hopper and the other opening on a higher level and connected to the tank, a valve seat between the ports, a flushing valve for controlling communication between said ports, an independent supply valve casing for connection to the water service, supply and drain valves in said casing, a pipe-jacket rigidly connecting the two valve casings, a movable water conveying pipe within the jacket and connecting said flushing and supply valves and having its outlet above the flushing valve, an operating stem projecting vertically from the flushing valve through the cap of the flushing valve casing for moving said water conveying pipe to operate said valves simultaneously, and said casings and valves being constructed to permit insertion or removal of said valves and the opening or closing of the casing without rotary movement of any of the valve parts.

1,288,092. Pipe-Joint. James R. McWane, Birmingham, Ala. A prepared self tightening joint suitable for pipe,

ECONOMY



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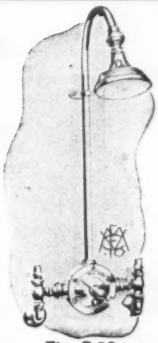

Fig. C 30

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Mixing Valve for Showers
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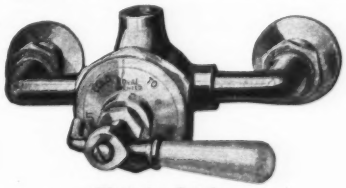

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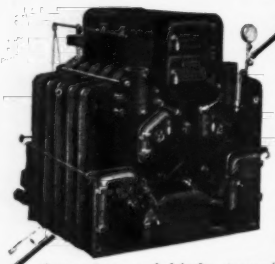

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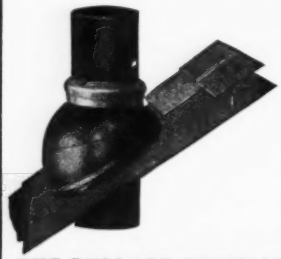

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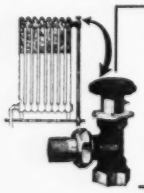

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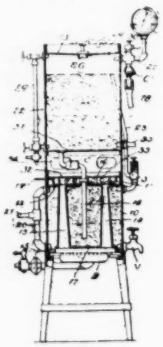
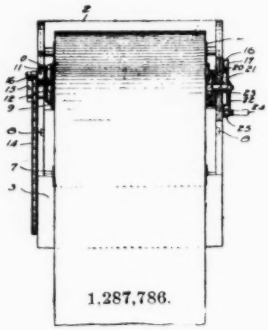
comprising bell and spigot portions with a series of filler blocks constituting a backing for the sealing material, the bell having a basic portion against which the blocks abut, fibrous packing material lodged against the backing, and sealing lead at the mouth end of the joint in compacting relation to the fibrous packing material.

1,288,206. Water-Heater. Harry G. Rucker, Hillsboro, Ill. A water heater comprising a heating tank, a supply tank located above said heating tank and spaced apart therefrom, a pipe for conducting the water from the supply tank to the heating tank, a check valve in said pipe, a burner disposed beneath the heating tank, oval-shaped tapering flues extending through the heating tank, a damper for controlling all of said flues, an imperforate plate located above the damper plate and below the supply tank, there being a series of heat exit openings between the damper and imperforate plate.

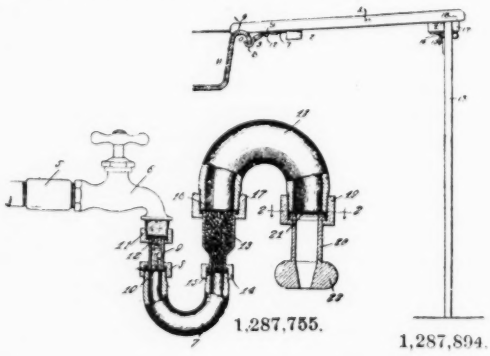


1,288,206.



1,287,786.

1,287,786. Towel-cabinet. George A. Steiner, Salt Lake City, Utah, assignor to American Linen Supply Co., Salt Lake City, Utah, a corporation. The combination with a cabinet having slots in its upper side walls, of a clean towel roll fitting within said slots and on which the clean towel is wound at the laundry and for transportation from the laundry to the cabinet, said cabinet also having slots in its lower side walls and a roll for the soiled towel fitting within said slots and both said rolls being readily removable, a feed roll mounted to contact with said clean towel roll and revolve the same to unwind the towel and provided with an operating crank, a winding roll mounted in said cabinet to contact only with the soiled portion of the towel and wind it upon its roll, and a driving connection between said feed roll and said soiled towel winding roll for simultaneous uniform movement thereof.



1,287,755. 1,287,894.

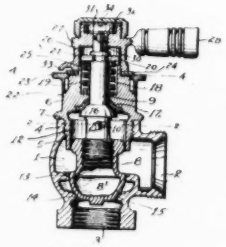
1,287,755. Liquid-filter. Charles Victor Rorer, Bridgeport, Conn. In a filter, a water supply valve, a filtering material containing chamber having detachable engagement

therewith, a U-shaped pipe having one end connected with the chamber, a second filtering material containing chamber having detachable engagement with the other extremity of the U-shaped pipe, an inverted U-shaped pipe having one end detachably engaged with the second filtering material containing chamber, and a nozzle connected with the opposite extremity of the inverted U-shaped pipe.

1,287,894. Detachable Drain-board for Sinks. Ora C. Cox, Philadelphia, Pa. The combination in a detachable board for sinks, of a board having a transverse groove on its under side near one edge, the groove being rounded to fit the rolled edge of a sink; a spring clamp secured to the under side of the board consisting of a leaf rigidly secured to the board and a hooked leaf pivotally connected to the first mentioned leaf; a spring around the pivot point of the clamp, one end of the spring bearing against the hooked leaf and tending to force it against the board, the hook being directly beneath the goove in the under side of the board, the end of the hook being spaced from the groove when in its normal position so as to allow it to engage the rolled edge of a sink when the board is applied at an angle to the sink so that on raising the board the grooved portion of the board will be drawn tightly onto the rolled edge of a sink; and a pivoted leg at the outer end of the board arranged to support said end independently.

Heating Department.

1,287,698. Valve. Edward J. Kiley, Chicago, Ill., assignor to The Ohio Brass Company, Mansfield, Ohio, a Corporation of New Jersey. A valve comprising a casing provided with a seat and a cavity, a valve member movable in and out of engagement with the seat, but interlocked with the casing against rotation, a rotary valve stem threadedly connected with said valve member and provided with an annular arcuate bearing surface, a metallic sealing member secured in a recess in the casing, said sealing member having a conical surface adapted to co-operate with the arcuate bearing surface of the stem to effect a seal to prevent leakage between the two; a U shape washer mounted in a groove in the stem, a spring in the cavity exerting its tension on said washer for constantly maintaining the co-operating surfaces in sealed relation; a cap engaging the stem to rotate the same, a pointer on the cap, a handle for the cap, and an indicating ring adjustably mounted below said cap and retained in place thereby.



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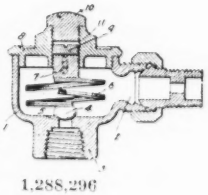

1,288,296

1,288,296. Thermostatic Trap. Reuben N. Trane, La Crosse, Wis. A thermostatic member for valves comprising a plurality of sets of spiral members, each spiral member being formed of two strips of metal having different expansive qualities, the position of the respective metals being reversed on each successive spiral, means for connecting the outer ends of adjacent spirals together, and means for connecting the inner ends of adjacent spirals together whereby the ends of the complete series will be moved toward and from each other according to the direction of expansion of the metals.

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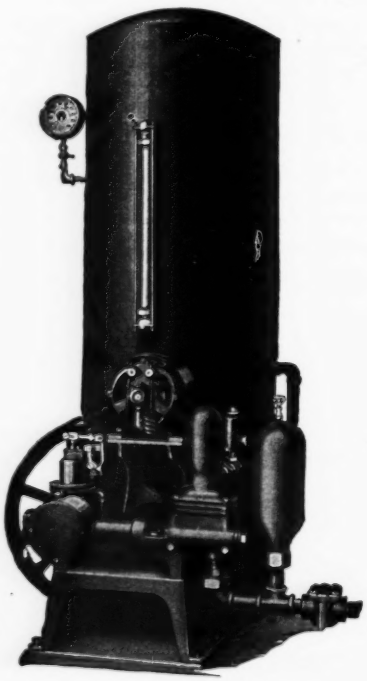
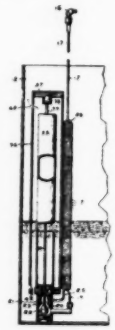


The GEO. J. ROBERTS CO.
DAYTON, OHIO

1,288,237. Automatc Air-Release and Humidifier for Radiators. Clarence C. Shipp, Indianapolis, Ind. In combination, with a steam and hot water radiator, a pan for receiving the water discharged from said radiator, an air and water conductor-means communicating with the interior of the radiator and having its discharge in advance of a controlling valve, said conductor-means being provided with a series of convolutions for condensing vapor and for providing a chamber for receiving the exhausted air from the interior of the radiator, an air conductor-means extending from the rear of said valve and discharging into said chamber, means for closing the discharge end of said second conductor-means against back flow of air, a valve for controlling the outward flow of air and water from the radiator, and means actuated by the rise and fall of the water within said pan for seating and unseating said valve.



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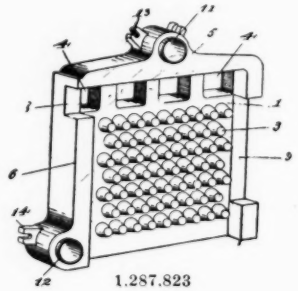


1,287,823

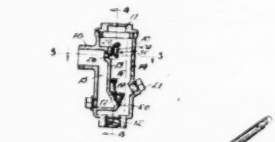
1,287,823. Water-heater. Joseph H. Bacon, Lakewood, Ohio, assignor to the Bacon Heater Manufacturing Co., Cleveland, Ohio, a corporation of Ohio. In a water heating apparatus, the combination of a plurality of water containing sections, the water containing portions of each of the sections being in communication, the sections being formed to provide spaces between adjacent sections whereby products of combustion may ascend between the sections each section having adjacent the upper portion thereof a plurality of walled openings whereby the spaces between sections may communicate, a flue opening formed in one side of each of said sections, a casing with which each flue opening in each section communicates, a flue connection for the said casing each section being provided with a cut out or open portion in a side thereof, means covering the said cut out portions, when the sections are assembled, and openings permitting faces through the cut out portions of each section to the space between adjacent sections.

1,287,729. Return-Fitting For Vapor-Heating Systems. Thomas C. Mout, Bratenahl, Ohio. In a heating system, a steam radiator, a chambered casing communicating with the lowest part of said radiator and adapted to receive condensed water therefrom, a pipe leading from said casing to the return main, a check valve in said casing, and a normally open air discharge connection also communicating between said radiator and said pipe independently of said water connection, said air connection also having a check valve therein adapted to be closed upon a reverse rush of fluid.

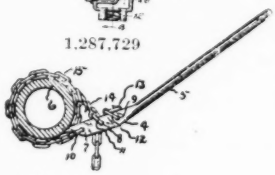
1,287,893. Pipe-Wrench. Clarence Courton, Smith Center, Kans. In a pipe-wrench, a head-member having a flat upper face and provided transversely thereof with apertures substantially parallel with said upper face, said head-member being provided with a handle and having a terminal part formed convergent from its bottom to its upper face,

a plurality of links each being mounted in an aperture of the head member, a plurality of hooks each being mounted on a link of the head-member, and a chain for circumscribing a pipe or similar object and mounted on a link of the head-member for a removable connection with one of said hooks.

1,288,236. Radiator Casing. Clarence C. Shipp, Indianapolis, Ind. The combination with a steam radiator casing provided in its rear wall with an air inlet opening communi-



1,287,729



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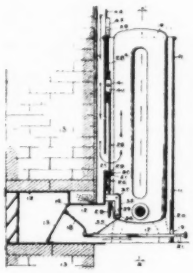


1,288,236.

cating with the interior of the room, a sliding damper for controllng the passage of air through said opening, a yoke carried by said damper, a movable rod, means carried by said rod for engaging said yoke to actuate said sliding damper, a damper actuating rod, a flexible connection between the damper actuating rod and movable rod, and an indicator moving with said damper for indicating the position of the latter with said inlet opening.

NAVY AGAIN OPEN FOR VOLUNTARY ENLISTMENTS. MANY GOOD OPPORTUNITIES OFFERED.

Owing to the great publicity given to the demobilization of the Army and Navy, and the fact that thousands of sailors and soldiers are being released, a large portion of the people of this country are unaware of the fact that the navy is again open for voluntary enlistments and that it is seeking young men who are anxious to enter the service, obtain valuable instruction for which the navy is so noted and have the opportunity of seeing the world at Uncle Sam's expense.

Wonderful opportunities are offered to men who desire to become electricians or machinists by trade.

Men between the ages of 18 and 35, who have had a small amount of machine shop experience, may enter the service and go through a complete machinists course at the Machinist School, Charleston, S. C.

Opportunity is also offered to men who desire to become electricians by trade between the ages of 18 and 30, who have a theoretical knowledge of electricity and who have had some practical experience in electrical work. Men enlisted in this branch of the service are given a complete course in electricity at the Electrical School, Hampton Roads, Va.

The above offers should appeal to any young men who are interested in either the electrical or machinist line, and who are desirous of obtaining a knowledge in this work of a higher degree than can be obtained by general experience in civilian life.

Young men, 17 years of age, may enlist as apprentice seamen with the consent of their parents or guardians.

Further information may be obtained by writing to, or calling at the Navy Recruiting Station, Transportation Building, Chicago.

The Call to Duty

There is never any question or doubt about the quick, prompt and positive response of the

TRADE PENBERTHY MARK.

Automatic Cellar Drainer

It is always on guard ready to start instantly.

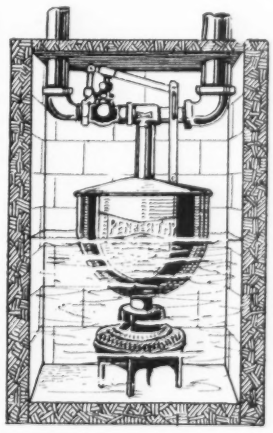
Keeps the place in which it is installed perfectly dry and sanitary.

Self-Priming

As soon as surface or flood water enters pit, the float rises when right height is reached, valve opens, allowing city water to flow through ejector, cause a suction, and carry sump water with it to the discharge. As water goes down, float follows and valve closes until enough water collects again to raise float, when whole operation is repeated.

All working parts, except strainer and float, above water. No rust, corrosion or clogging up with slime, dirt or sediment. Made of best bronze metal throughout, except float, which is copper.

There are a lot of homes in your town that need the protection of the Penberthy Drainer. It is easy to sell and install. Will help you build bigger business now when you want it.



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(Established 1886)

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Canadian Factory
Windsor, Ont.

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The charge for advertisements under this heading is $1.00 for 25 words or less, including heading and address; 4 cents each for additional words. To insure insertion, copy and remittance should reach us by Wednesday morning.

Situations Open

WANTED—FIRST CLASS PLUMBER. Steady work. One accustomed to country work preferred. Address 2598, care "Domestic Engineering," Chicago. 2-1-8-15

WANTED—A GOOD, LIVE WIRE plumber's helper with about two years' experience. A good opening for the right man. Address T. Wood & Co., Dawson, Ga. 2-1

WANTED—EXPERIENCED SALESMAN for an old established Philadelphia Plumbing Supply House, covering Eastern Pennsylvania. Splendid opportunity for live wire. Address 2601, care "Domestic Engineering," Chicago. 2-1; 8

WANTED—BY CHICAGO JOBBER OF plumbing and heating supplies, man thoroughly familiar with this line for inside position. Must be good at figures and detail work. State age, references, etc. Address 2593, care "Domestic Engineering," Chicago. 1-18/4

WANTED—PLUMBER WITH EXPERIence in heating, A-1 estimator who can handle men and give results, who would like to interest himself in the business later. Location in Connecticut, population 40,000. Give age, salary expected and nationality. Address 2602, care "Domestic Engineering," Chicago. 2-1

SALESMEN WANTED—EXPERIENCED traveling salesmen in the sale of plumbing goods wanted for our well known line for several Eastern and Western territories. Inexperienced applicants will not be considered. Correspondence confidential. Cooper Sanitary Mfg. Co., 34th and Chestnut Sts., Philadelphia, Pa. 1-25/2-1

WANTED — EXPERIENCED HEATING salesman for Western Pennsylvania, and Eastern Ohio. This should appeal to a man of character and ability, as this territory is alive, being worked by one of our men who is to be transferred to another territory. Address Heating Department, Standard Sanitary Manufacturing Company, 439 Water St., Pittsburgh, Pa.

WANTED—CONSULTATION, LOOKING forward toward employment with a man who knows where and how to sell Pressure Reducing and Regulating Valves. We manufacture such a valve which has been sold in limited way for ten years and is a proven successful, going proposition. We are looking for a man who can show us how to increase our sales. State age, experience and where obtained and salary desired. Address 2599, care "Domestic Engineering," Chicago. 2-1; 8; 15; 22

Situations Wanted.

POSITION WANTED AS TRAVELING or special representative for boiler, steam or plumbing goods manufacturers, by heating engineer experienced in heating, ventilation and power work. Acquainted with New York state trade and architects. 17 years with two firms and at present connected with the Construction Division of the War Department at Washington, D. C., as Heating and Ventilating engineer. Best of references. Address 2597, care "Domestic Engineering," Chicago. 1-25/2-1

For Sale.

FOR SALE—TWO PIPE THREADING machines in good condition; one General Electric motor, 3 H. P. The Meyer & Hoebner Co., Dayton, O. 2-1; 8; 15

Miscellaneous.

WE BUY USED PLUMBING AND heating material. D. B. Plumbing & Heating Sales Co., Ft. Wayne, Ind. 2-1 tf

WANTED—USED POWER PIPE CUTting or nipple machine, size ¼-in. to 2-in., with or without motor. Give details. Address 2600, care "Domestic Engineering," Chicago. 2-1

PLUMBING AND HEATING COST Keeping Blanks, Time Sheets, Job Tickets, Order Books, Material Slips, Estimate Sheets, Contract Blanks, Fitting Bin Markers. Send stamp for free samples. Haddon Specialty Co., Haddon Heights, N. J. 1-11;25

A LIVE, WIDE-AWAKE JOBBER IN Maryland wants exclusive selling agency in Maryland, Delaware, Virginia and West Virginia, for Steam and Plumbing Specialties of merit. Address 2596, care "Domestic Engineering," Chicago. 1-25/2-1-8-15

SELL YOUR SURPLUS COUPLINGS and fittings. Write us. The A. & J. Mfg. Co., 557 W. Lake St., Chicago. tf

WE BUY IRON PIPE COUPLINGS—spot cash. How many, either pounds or pieces have you of various sizes? Gwilliam Supply Co., 615 Christian Street, Philadelphia, Pa. 10-6, tf

AMERICAN
Handy Supplies

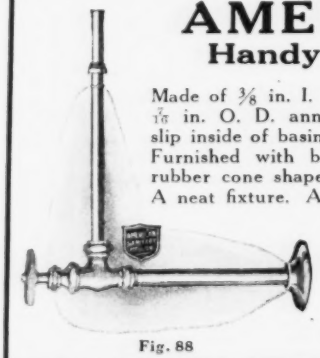

Fig. 88

Made of ⅜ in. I. P. S. tube to wall with ⅛ in. O. D. annealed upright tube, to slip inside of basin cock shank.
Furnished with brass friction ring and rubber cone shaped washer, as shown.
A neat fixture. A big time saver.

Manufactured by
AMERICAN SANITARY MFG. CO.
Abingdon, Illinois

A Steam Trap That
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There is nothing to get out of order. Do away with flooded and cold radiators. The quick expanding center tube makes valve action positive. It allows water to pass through but shuts tight when live steam comes along.

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